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Entrepreneurship, Institutions and Economic Development: A Configurational Approach

Colin David Reddy

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Abstract

This thesis responds to calls for more advanced portrayals of institutional effects on cross-country opportunity entrepreneurial activity (EA). In particular, it examines the effect of formal institutional development on EA depending on differences in informal constraints and economic development (ED). Though acknowledged in part within extant theory, little empirical research has documented the simultaneous interaction of all of the three variables in formal and informal institutions and ED. This research offers one perspective on the interdependencies and directionality between these variables.

I suggest that a country's entrepreneurs respond differently to formal institutional incentives depending on societal culture and the nature of opportunities that arise from the predominant economic structure whether agriculturally, manufacturing or services based. I also develop an operational framework to translate institutions to conditions for EA. This framework suggests that formal institutions are associated with entrepreneurial opportunities and incentives, financial capital and an explicit form of human capital such as formal education. In addition, informal institutions are associated with social capital and a tacit form of human capital such as practical experience.

I construct a panel dataset based on the GEM and World Bank Group Entrepreneurship Surveys and the IMF database for up to 45 countries over the 2000–2007 periods. I test the hypotheses with a random effects generalised least squares model in a hierarchical multiple regression procedure. This procedure tests the significance in the variance of cross country EA due to the addition of two-way and three-way interaction terms. A contingency approach examines for two-way interactions while a configurational approach examines for three-way interactions. The regressors include not only explanatory variables themselves but also multiples of explanatory variables. I multiply the explanatory variables that represent conditional effects to test for moderating or interaction effects.

The empirical results confirm that higher levels of formal institutions do indeed result in higher levels of EA. However, the results support the three-way but not the two-way interactions. This suggests differences in the positive effect of formal

institutions on EA that is not simply contingent on informal institutions alone. For institutions to provide a universal explanation of EA, their concomitant interaction with ED becomes important. In particular, the results show that higher levels of informal institutions - a culture of individualism and risk taking - tends to enhance the effect of formal institutions on EA more sharply among less developed than developed countries.

The thesis confirms a non-linear but still increasing trend in opportunity EA as ED increases. An introduction of conditions of informal institutions and ED result in much greater confidence in a theory predicting the effect of higher levels of formal institutions on EA. It is advisable that policymakers design for differences in their cultural and economic contexts when they adopt formal institutions that provide incentives to entrepreneurs in exemplar countries.

Dedication

To my family: Gildah, Lee, Kgosigadi and Lesedi

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1. Introduction

Efforts at market reforms to stimulate entrepreneurial activity (EA) have increased particularly after the fall of the Berlin wall. While former socialist countries have reformed their markets, other less developed countries in Africa, Latin America and Asia also started to do so (Rodrik, 2006). Different country contexts, however, have led to differential impacts of these market reforms on EA. In particular, two key conditions, which alter the effect of these reforms, are the existing local cultural context (Klyver et al., 2008) and the predominant economic structure (Acs et al, 2008).

1.1 Problem background

This thesis seeks an understanding of the varying rates in cross-country EA based on market reforms, local culture and economic structure. It explains the effects of market reforms and local culture on EA through institutional economic (IE) theory (North, 1990). IE theory relates market reforms and the local culture to an individual's incentives to start businesses. However, individuals also require opportunities. Arguments that focus on either individual incentives or opportunities alone, without regard to the other, lead to an incomplete analysis (Shane and Venkataraman 2000). The thesis relies on economic development (ED) theory to explain the changes in the quantity and nature of opportunities.

North (1990, p.3) defines institutions as "the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction." Though he takes an economic perspective of institutions, he also includes an informal institutional dimension, which allows for secondary incentives such as social conformity. Formal institutions are codified. They include constitutions, laws, and regulations. In contrast, informal institutions lack formal codification and include conventions, norms, and traditions. While the force of law backs formal institutions, social custom enforces informal institutions. In addition, formal institutions are visible. For instance, countries can alter their constitutional law comparatively quickly to adapt to changing economic circumstances. In contrast, informal institutions are the invisible norms, values and acceptable behaviours (Coyne and Sobel, 2010; Sobel and Coyne, 2011).

This thesis argues that ED is an explanatory variable of EA since it explains how opportunities vary across countries. ED involves a process of structural transformation (Brinkman, 1995). It occurs with sustained growth from a simple, low-income economy to a modern, high-income economy (Myint and Krueger, 2009). Its activities should be geared to creating an economic base (North, 1955). This includes economic activity where a surplus remains after the local consumption of the product, service, or activity has been satisfied. Such a surplus can then contribute to trade with parts of the country or the world. The money from trading activities results in an economic gain, in turn giving rise to ED.

Kirzner (1973) suggests that the initial conditions of ED starts off the relationship between ED and EA. Specifically, Banerjee and Newman (1993) observe that the initial distribution of wealth from ED determines the pattern of occupation choice of potential entrepreneurs. The structure of occupational choice in turn determines how much people save and what risks they bear. These factors then give rise to a new distribution of wealth.

Opportunities arise from the changes in economic structure. These opportunities increase when economic activity advances from primarily agricultural activity to primarily manufacturing activity and eventually to a high level of service activity (Porter et al, 2002). "In developed economies, consumer goods industries make superior use of highly specialised capital goods, particularly in machinery, and enjoy access to a wide variety of producer services, such as equipment repair and maintenance, transportation and communication services, engineering and legal supports, accounting, advertising, and financial services and so on" (Ciccone and Matsuyama, 1996, p33). Herein are numerous opportunities for potential entrepreneurs to exploit.

I theorise around individual-level EA since country-level EA aggregates individual level EA. Three broad streams of entrepreneurship literature have sought to understand why some individuals and not others choose to pursue entrepreneurial opportunities (Levie and Autio, 2010). These three streams have looked to theories from the fields of psychology, sociology and economics. Explanations based on psychology rely on answers in individuals' traits and cognitive biases (Busenitz, 1999; McClelland, 1961; Palich and Bagby, 1995).

This tradition has emphasised the risks and uncertainty associated with the entrepreneurial occupational choice and suggested that only individuals with unusually strong achievement motivation and a tolerance of risk and uncertainty will tend to choose to start businesses. The psychological stream argues that predominantly intrinsic motivations drive entrepreneurs (Levie and Autio, 2010). It considers the context of the individual as less important.

The sociological stream of entrepreneurship research has sought to explain the entrepreneurial occupational choice as the individual's response to institutional pressures to conform (Aldrich and Fiol, 1994; DiMaggio and Powell, 1983; Thornton, 1999). This stream allows for variance in EA rates across social groups. Non-economic factors induce this variance. Rational calculations of economic utility are only of secondary importance for the entrepreneurial choice, as individuals tend toward the socially desirable and normatively appropriate option (Levie and Autio, 2010).

The economic literature tends to emphasise differences with respect to individual's endowments of human, social and financial capital, and it considers individuals as rational beings who seek to maximise their economic and non-pecuniary utility associated with an occupational choice (Blanchflower et al, 2001; 1989; Lazear, 2005). Nevertheless, this does not necessarily mean that those with the greatest capacity to be entrepreneurs will become entrepreneurs (Jovanovic, 1994). Because individuals tend to maximise utility, their decisions will be influenced by institutional factors that regulate the distribution of profits between different stakeholders, and thus, the accumulation and profitability of returns to their entrepreneurial efforts (Autio and Acs, 2010). Thus, depending on how institutional conditions influence the distribution of profits between, e.g., entrepreneurs and employees, individuals might decide to be either entrepreneurs or employees.

The occupational choice literature provides a useful theoretical underpinning for the study of cross-country EA (Levie and Autio, 2010). The assumptions of rationality and utility maximisation associated with investments of human, social and financial capital permit the consideration of the entrepreneurial occupational choice as primarily an individual choice rather than one driven by psychological

traits, behavioural compulsions or social conformity pressures. Therefore, this thesis assumes an economic incentive for individuals to start businesses. In acknowledgement of the influence of the local society on entrepreneurship and wealth creation (DiMaggio and Powell, 1983; Thornton, 1999), the thesis considers the cultural norms and values of society as a secondary incentive.

The research of Acs and Szerb (2009) gives us some idea of the ED and institutional perspectives of the variance in EA rates across countries. This research shows an S-shaped relationship (see Figure 1) between ED and an index of entrepreneurship that includes measures of entrepreneurial attitudes, activity and aspirations from the Global Entrepreneurship Monitor (GEM) research (Bosma et al., 2009). An S-shaped relationship results because countries within primarily agricultural economic activity have low EA, which then increases among countries with manufacturing and innovation activity eventually levelling off as countries become fully developed (Acs and Szerb, 2009).¹

Which institutional factors most significantly affect EA also depends on an economy's stages of ED. For example, state-of-the-art accounting disclosure rules are of little use in an economy where illiteracy and corruption prevail (Fogel et al, 2006). At this stage, the state should rather promote EA by offering entrepreneurs secure ownership of their businesses and legal enforcement of business contracts they enter.

¹ Acs and Szerb (2009) restricted their work to a study of opportunity EA. These two types of EA differ depending on the motivation of entrepreneurs to start their business. While opportunity entrepreneurs pursue a perceived opportunity, necessity entrepreneurs start businesses because all other employment options are either absent or unsatisfactory (Reynolds et al., 2005.). Opportunity entrepreneurs start businesses voluntarily. They are also likely to have invested more in the skills necessary to succeed as a business owner (Reynolds et al., 2005.). Empirical evidence based on GEM data shows that opportunity-driven EA has a stronger association than necessity EA to ED (Acs, 2006). As a result, an examination of the variances in opportunity-driven EA is expected to increase the validity of any inferences in the relationship between ED and EA (Acs and Szerb, 2009).

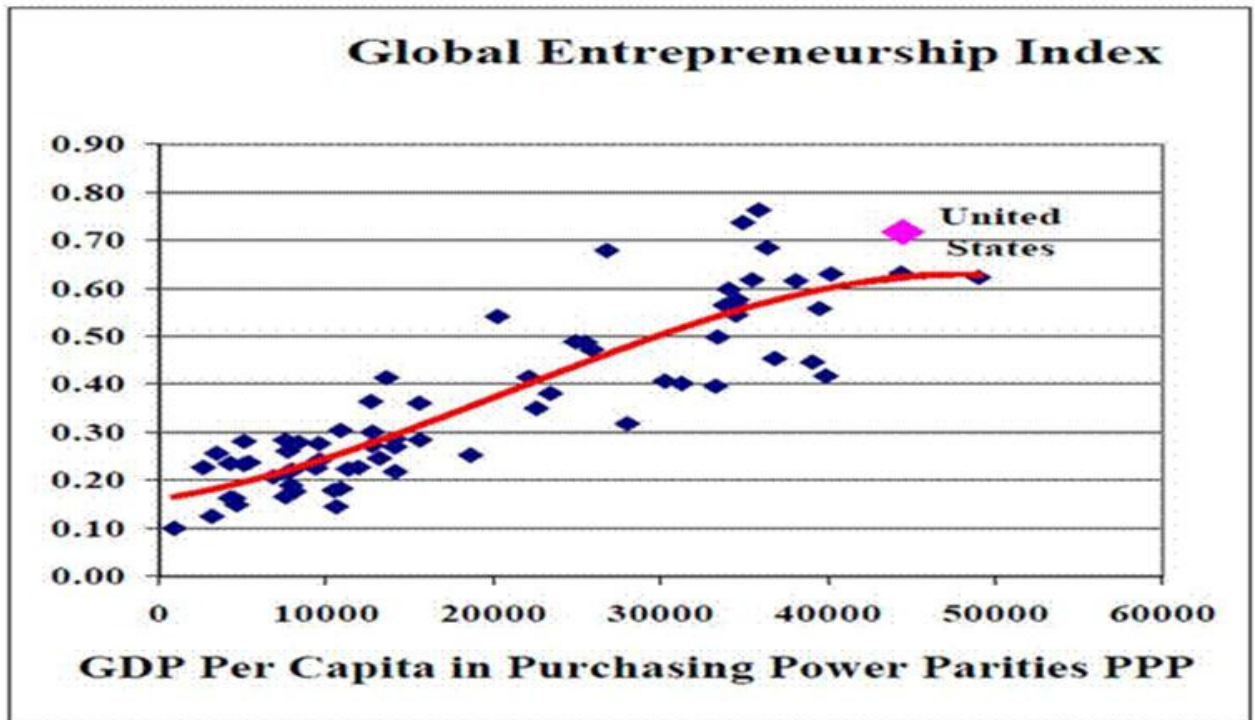


Figure 1: The S-shaped ED-EA relationship

Source: (Acs and Szerb, 2009)

1.2 Research problem

There is yet more to understand about the underlying causes of cross-country differences in EA (Levie and Autio, 2011). If one examines the interplay between institutions and ED then one can explain the changes in the rate of cross-country EA. However, the way that the incentives underlying institutions and the opportunities underlying ED interact to give rise to an individual's decision to start a business has not gone uncontested. The interdependency between incentives and opportunities complicates efforts at explaining differences in country-level EA. Theorists take different perspectives (Alvarez and Barney, 2007). Some theorise that opportunities exist independently in the environment, waiting to be discovered (Shane and Venkataraman, 2000). Others suggest that opportunities are "enacted" based on the entrepreneur's perception, interpretation, and understanding of environmental forces rather than simply discovered (Dutta and Crossan, 2005; Gartner 1985). Accordingly, opportunities are not waiting to be found (Ardichvili et al. 2003) and like incentives, they arise within an individual. In

fact, as opportunities increase with ED, societal appreciation of entrepreneurship also increases (Minniti and Bygrave, 1999). Accordingly, the opportunities themselves also result in incentives.

Extant research (Aidis et al, 2012; De Clercq et al, 2011b; Levie and Autio, 2010; Lim et al, 2010; Kreiser et al, 2010; Acs and Szerb, 2009) has not adequately explained the underlying interdependencies between opportunities and incentives that lead to cross-country variations in EA rates. A further complication arises because of interdependencies within incentives themselves, i.e. between formal and informal incentives. For instance, the positive effect of formal market reforms on EA might decrease if the local society has yet to regard entrepreneurship as a legitimate occupational choice. Though Acs and Szerb (2009) have attempted to model these interdependencies, their work is primarily empirical. They do not give a theoretical explanation of cross-country EA based on the interdependencies between opportunities and incentives...

Based on my earlier argument for a primarily economic incentive underlying the occupational choice decision, I focus on the formal institutions-EA relationship. Formal institutions regulate the distribution of profits between different stakeholders and therefore, the profitability of entrepreneurial efforts (Levie and Autio, 2010; Autio and Acs, 2010). When formal institutions can influence a profitable outcome for entrepreneurs, then they serve as a powerful incentive for entrepreneurial efforts.

Though researchers acknowledge that the impact of market reforms on EA is not universal (North, 1990; Boettke et al, 2008b), little research explains the variations in EA rates due to formal institutions across an entire spectrum of contexts. For example, one ought to consider both those contexts where societies perceive entrepreneurial choice as legitimate and those that do not. For instance, the strengthening of formal institutions such as a reduction in company tax might serve as a greater incentive when the local society views entrepreneurship and wealth creation as a legitimate occupational choice. This legitimacy eases their effort to identify and source available resources. In turn, this enables them to go on to find new and better ways to combine these resources with their own resources and knowledge (Arenius & De Clercq, 2005).

A lack of attention to the deeper cultural-cognitive elements expressed in policies and regulations can lead to a superficial understanding of institutional processes (Roland, 2004). In fact, formal institutions are only effective when embedded in informal incentives (Williamson, 2009; Boettke et al, 2008b). We thus need research that includes both formal and informal institutions as explanatory variables of cross-country EA (Bruton et al, 2010).

Much of current research has tended to describe informal behaviour in terms of social ties and networks rather than culture. These findings suggest that enterprising individuals use social relations to compensate for the lack of formal market mechanisms like property rights, contracting, and information exchange (Aidis, 2005; Smallbone et al., 2006; Aidis et al., 2009; Estrin and Prevezer, 2010; Naudé, 2011; DeClercq et al 2011a). For instance, entrepreneurs in less-developed countries might join various associations to establish the social ties that they go on to use to substitute for the inadequate regulatory environment (De Clercq et al, 2010). Such a substitution effect is absent among developed economies (Danis et al, 2010).

Access to information on the existence of the opportunity (Kirzner, 1973) is an important antecedent of cross-country EA. Social ties and networks play a key role in accessing information (Singh et al., 1999). An individual with a high level of social status finds it easier to convince others that the opportunity they have identified is valuable, despite the uncertainty and information asymmetry present with such opportunities (Dolton and Makepeace, 1990). Social ties increase the likelihood that people will exploit entrepreneurial opportunities because social contacts provide information useful to the exploitation process (Cromie and Birley, 1992).

However, research should go beyond the representation of informal institutions as mere social ties. As a result, Danis et al (2010) suggest that the work on the institutions-EA relationship include not only the social relationships that arise from associational activity, but also related cultural norms and values (Coleman, 1990; Putman, 1993).

Moreover, even when such societal incentives are adequate, the surrounding economic structure might limit the type of opportunities available to aspiring entrepreneurs (Pinillos and Reyes, 2011). While I have motivated for informal institutions as a primary moderator of the formal institutions-EA relationship, the introduction of ED as a secondary moderator of cultural factors might result in an even more complete explanation of the changes in cross-country EA rates. Acs and Szerb (2009) show that increasing levels of ED have an overall positive effect on opportunity EA. Liao and Welsch (2003) found a strong association between cultural norms and technology-based entrepreneurs and an equally strong association between social ties and non-technology-based entrepreneurs. Technological change has also been strongly associated with ED (Porter, 1998b; Porter et al., 2002; Acs et al., 2008a, Rostow, 1960).

Research thus far does not examine the contingent effects of both societal incentives and economic structure on the formal institutions-EA relationship. This requires a test of the simultaneous effect of formal and informal institutions and ED. In particular, approaches should examine for variations in EA due to a three-way interaction. This calls for a configurational approach. While a contingency approach examines for two-way interactions, a configurational approach can examine for a three-way interaction (Wiklund and Shepherd, 2005).

Lastly, in research with such closely related variables such as EA, institutions and ED, one needs to deal with endogeneity concerns. This applies in particular to models acknowledging bi-directional causality between EA and ED (Reynolds et al., 1994; Naude, 2010a) and in the link between institutions and ED (Chang, 2010). Longitudinal research designs are useful to enable the control for endogeneity (Wooldridge, 2002). Danis et al (2010) also suggest that a longitudinal research design will better establish the causal mechanisms underlying EA.

1.3 Research purpose and objectives

This thesis uses both IE and ED perspectives to explain variations in the rate of cross-country EA. Moreover, it explains the variations in EA due not just to the direct effects of institutions and ED, but also the interplay between institutions

and ED. As suggested earlier, the institutional economics perspective delineates institutions into formal and informal incentives (North, 1990). Though this perspective has been referred to as an economic one, through a consideration of informal institutions one can also include the underlying cultural dynamics of society. This thesis's explanatory variables thus include formal institutions, informal institutions, and ED. A configurational approach or three-way interaction (Lumpkin and Dess, 1996) has the potential to assess the simultaneous interplay between these three explanatory variables. This type of approach ought to bring out the nuances in the effects of institutions and ED on EA.

In order to commence a multiple regression analysis that includes a three-way interaction, the researcher has to choose a theoretically meaningful focal or primary explanatory variable (Jaccard et al, 2003). Unlike a two-way interaction analysis with only one contingent or moderating variable, a three-way interaction analysis contains two moderating variables. Thus, the researcher should also decide on a primary and secondary moderator. As argued earlier, this thesis assumes that economic incentives motivate entrepreneurs before societal ones. Accordingly, this thesis locates formal institutional incentives as the focal explanatory variable. This might include the incentives underlying the market reforms among countries in transition as well as developing countries.

I argue that formal institutional reforms like the introduction of strong property rights do not have the same effect on EA across different countries. Formal institutions that are effective in increasing EA in one country cannot easily apply to another country with a different context. In particular, the effect of formal institutions will depend on the local cultural norms and values as well as the dominant economic structure. As Porter et al (2002) note, some countries are at a factor-driven stage with primarily agricultural activity while others are efficiency-driven with primarily manufacturing activity. Yet others are at an innovation-driven stage with a high level of service activity. Overall, the responses of entrepreneurs in different countries will differ because of differences in incentives that arise out of its institutional context as well as the nature of opportunities due to differences in the predominant economic structure. Accordingly, this research uses the configurational approach to examine the effect of formal institutions on cross-

country EA when contingent on both the level of informal institutions and ED. In particular, I ask, “How and why is the formal institutions-EA relationship moderated by informal institutions and ED?”

Brambor et al (2006) suggest an examination of the three-way interaction term for this type of analysis. I show the basic operational model below with the emphasis on the form of the last term with a coefficient b_7 .

$$EA = b_0 + b_1(ED) + b_2(Formal) + b_3(Informal) + b_4(ED)(Informal) + b_5(ED)(Formal) + b_6(ED)(Formal)(Informal) + b_7(ED)(Formal)(Informal)$$

Where:

EA = cross-country entrepreneurial activity

ED = economic development

$Formal$ = formal institution

$Informal$ = informal institution

b_0 = estimated constant (later I will explain how heterogeneous country effects are included under this term)

$b_1...b_7$ = estimated coefficients.

Figure 2 depicts the broad operational framework, the detail of which I will discuss in later sections. Earlier, I noted that formal institutions include the laws and regulations designed by the state. Similarly, one regards the formal education system as a formal institution. This formal education system influences EA through its influence on an entrepreneurial resource like explicit human capital (HC). Similarly, the formal finance system influences EA through its influence on an entrepreneurial resource like financial capital (FC). The regulatory system of taxes and other related economic type entrepreneurial incentives are referred to as opportunity and incentives (O&Is). Earlier, I noted that informal institutions included customs, norms, and cultures and they manifest in societal behaviour. I associate these with an entrepreneurial resource like social capital (SC). I also suggest that these be associated with a tacit form of HC when individuals learn from their peers at work or even family members.

Adequate conditions for HC and SC are required to perceive O&Is, access FC and identify the actual opportunities available because of the prevailing economic structure. Entrepreneurship literature confirms that conditions for HC, SC, FC and O&Is influence EA (Reynolds and White, 1997; Davidsson and Honig, 2003a). I argue that institutions ought to nurture these conditions for EA.

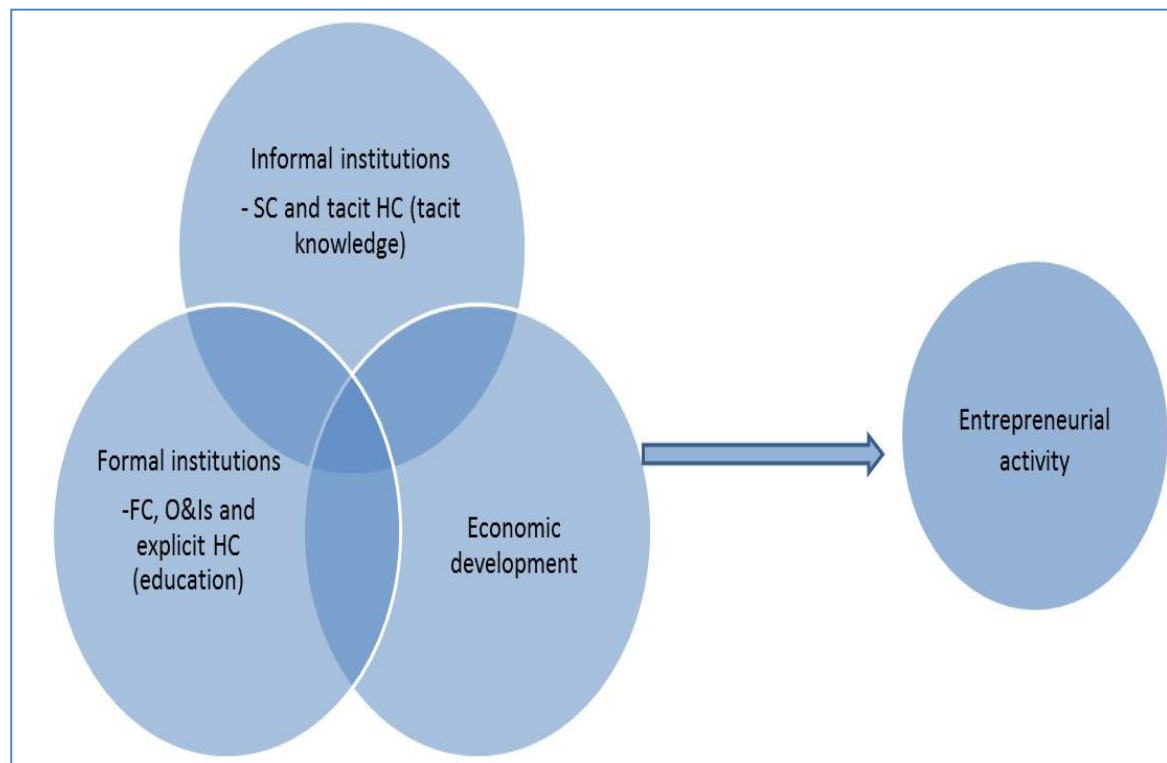


Figure 2: Preliminary framework of the nexus between EA, ED and institutions

O&I conditions might usefully be measured by World Bank Governance Indicators and Doing Business projects (World Bank, 2007). Also useful are GEM entrepreneurial framework conditions (EFC) (Reynolds et al., 2005) like government policies and regulations, research and development transfer, the openness and dynamism of local markets. A possible indicator of FC conditions includes the GEM Finance EFC, which probes mainly external sources of finance regulated by law and accompanied by formal contracts. The GEM EFC on business content in education and training indicates explicit HC conditions. This assumes that government policy influences the content of education and training.

The GEM EFC on general entrepreneurship capacity might usefully indicate tacit HC conditions. Possible indicators of SC conditions include GEM EFCs like entrepreneurial culture, the societal image of the entrepreneur, and the support and relations derived from business services and government programmes. Another useful indicator of includes the GEM individual measure viz. 'knowing another entrepreneur within the last two years.

1.4 Contribution

Country-level EA differs depending on the institutional context and level of ED within an economy. Therefore, one must examine this broad nexus between EA, institutions and ED (Acs et al, 2008a). By asking how and why informal institutions and ED moderate the effect of formal institutions on EA, this research will contribute to an understanding of EA across a wider range of contexts.

1.4.1 Theoretical contribution

This study contributes to on-going research on cross-country EA (Aidis et al, 2012; De Clercq et al, 2011b; Levie and Autio, 2010; Lim et al, 2010; Kreiser et al, 2010). Unlike prior studies, it also considers ED explicitly as an explanatory variable of EA. By using a configurational approach, this thesis can examine the combined effects of formal and informal institutions as well as the further effect of ED. Thus, I am able to go beyond simply including these explanations in an additive manner to include how they interact.

By considering the simultaneous interaction of formal and informal institutions and ED, this thesis can examine the underlying theoretical interdependency between incentives and opportunities as well as the interdependency within incentives themselves. Extant research has not adequately explained the underlying interdependencies between incentives and opportunities that lead to cross-country variations in EA rates. A further complication arises because of interdependencies within incentives themselves, i.e. between government and societal incentives (Dikova et al, 2010; Kreiser et al, 2010). By examining the formal institution-EA relationship under conditions of both informal institutions and ED, this study goes beyond explanations based on formal economic incentives to include informal cultural constraints and economic structure.

There is a need to understand the conditions in which formal institutional reforms operate to influence EA. Conditions include informal institutions and economic structure. Existing research has tended to focus on social ties and their moderating effect on particularly weak formal institutions. It has paid limited attention to issues of culture and trust as moderators of the formal institutions-EA relationship. Moreover, the differences in economic structure also influence both the level and rate of change in EA (Acs and Szerb, 2009). Thus far, research has not addressed the moderating effects of both informal institutions and ED on the incentives provided by formal institutions to entrepreneurs in the proposed direction i.e. the effect of formal institutions moderated by informal institutions and in turn moderated by ED. Moreover, this research extends the understanding of the proposed S-shaped ED-EA relationship by providing an institutional economic explanation of its non-linear trend.

The thesis responds to several other calls for extending current research. De Clercq et al (2010) suggested increasing the external validity of the effects of institutions on EA using a wider range of economies while Danis et al (2010) suggest using longitudinal data to establish causal mechanisms. Danis et al's (2010) also called for broader conceptualisations of SC than the oft-used social network explanations. The thesis also responds to a call to acknowledge opportunity-driven instead of necessity-driven EA as a useful measure to continue the conversation of the significance of EA in the light of ED (Acs and Szerb, 2009). While acknowledging the non-linearity in the ED-EA relationship being proposed by Acs and Szerb (2009), it examines this in the light of the institutional interplay. The configurational approach, applied to a combined sample of less-developed and developed countries will model non-linear effects as well as the interplay between ED and institutions, answering to the concerns of Chang (2010) among others that the development economics debate does not often account for such interplays.

Finally, the research provides a framework to bridge the work done by institutional and entrepreneurship theorists. This bridge links formal and informal institutions to entrepreneurship conditions such as HC, SC, FC and O&Is. Since I use the GEM EFCs to operationalise this research, I also respond to Levie and

Autio's (2008) call to test the GEM EFC model in an investigation of the contexts of entrepreneurship. While they were among the first to test the impact of EFCs on entrepreneurship, this research will extend their efforts by locating the EFCs within institutional theory and ED. In addition, whilst the GEM EFCs (Bosma and Levie, 2010) provide a means to translate individual-level antecedents of EA to country-level conditions, this research aims to develop a more parsimonious framework by consolidating these into formal and informal institutions.

1.4.2 Practical contribution

This study's findings could extend an understanding of appropriate policy frameworks for EA. Policymakers need to examine ways to factor in informal social constraints when designing policies and regulations to promote EA. For instance, they should reduce not just the red tape arising from arduous formal institutions but also stimulate individual risk-taking (Bruton et al, 2010; Boettke et al, 2008b). The effects of such cultural predispositions depend on the surrounding economic structure (Pinillos and Reyes, 2011).

An integrated framework that includes both formal and informal institutions will assist policymakers to visualize the links between their disparate policies across several government departments. For example, government efforts into HC development may turn out to be inadequate in increasing EA levels since poor incentives like personal income tax and business tax may result in an individual with high levels of HC rather seeking high-paying employment (Naude, 2010b).

A singular government department cannot influence EA in an isolated manner. Government departments need to align themselves in light of a national goal towards economic growth. Lundström and Stevenson (2002) assert that the greater the commitment to entrepreneurial development, the more effort there is in designing an interconnected government structure. This constitutes one of the greatest challenges in the implementation of a systemic and comprehensive entrepreneurial development strategy (Kantis et al., 2005). By contributing toward an understanding of the mechanisms that underlie EA, this research will enable development practitioners to assess their own entrepreneurial contexts.

Moreover, it will assist policymakers in developing strategies to influence such mechanisms to achieve their stated policy goals.

1.5 Definitions, scope and limitations

This research focuses on opportunity-driven EA since empirical evidence based on GEM data finds that only opportunity-driven EA is associated with economic growth (Acs, 2006). As a result, it does not look at other manifestations of entrepreneurship such as necessity EA and even corporate entrepreneurship or intrapreneurship (Bosma et al., 2010).

The data for EA was extracted from the World Bank database on new business registrations across the world, limiting the application of this research to the formal economy (Klapper and Delgado, 2007; Acs et al., 2008b). I particularly use the data on 'Entry Rate', which is the number of newly registered corporations divided by the number of total registered corporations. Entrepreneurs who are motivated by an opportunity to grow their business also tend to register their enterprises (Levie and Autio, 2011). The use of new business registration data limits the definition of EA to the creation of a new enterprise (Gartner, 1985). While GEM data measures the potential for EA, the World Bank data measures actual EA albeit at a formal level (Acs et al., 2008b).

This study limits its interpretation of ED to modernisation and technological advance (Solow, 1957; Rostow, 1960). During ED, a country's population increases its living standards, with sustained growth from a simple, low-income economy to a modern, high-income economy (Myint and Krueger, 2009). Accordingly, researchers tend to measure ED by GDP per capita.

Measuring ED through GDP per capita has its limitations. Calculations of GDP per capita capture the transactions of formally registered enterprises within a formal economy and thus neglects activities within an informal economy (Schneider and Enste, 2000). Focusing on GDP per capita may therefore underestimate ED, e.g., transition economies like Poland are economically developed but have low GDP per capita (Beck and Laeven, 2006).

This thesis treats ED as an explanatory variable. However, theorists (Wennekers and Thurik, 1999) commonly acknowledged that variations in EA also explain ED. In the Methodology section later, I will look at ways to control for the endogeneity of ED. Endogeneity accounts for the fact that the explanatory variable depends on unobserved factors or even the feedback from the dependent variable as is the case in the ED-EA relationship. Not accounting for endogeneity will result in possible estimation errors of the regression coefficients.

In fact, one doubts that the strict assumptions required for a recursive model are appropriate. In all likelihood, there are more non-recursive relationships among institutions, ED and EA that a fully specified path model might do justice do. For example, there is increasing evidence that entrepreneurs influence institutional change. For example, the institutional and regulatory framework in a democratic society results partly from a political process that is responsive, among other things, to the personal agency beliefs of individuals and organised interest groups whose political support is sought (Harper, 2003; Battilana et al, 2009). The prevalent personal agency beliefs of potential coalitions, in combination with their motivations, interests and ideologies, comprise the aggregate background of wants, which shape demands for public policy. Demands refer to those wants that the members of organised interest groups would wish to see implemented through public policy outputs of some sort (e.g. tax reform, tariffs and trade restrictions, and wealth transfers). As a result, we tend to run into problems of identification in explaining the supply of entrepreneurship and the determinants of entrepreneurial alertness. Such problems might include the difficulties in sorting out the potential simultaneous and lagged relationships, which often characterise economic phenomena (Harper, 2003). We also know that formal institutions arise out of longstanding informal institutions like culture (Boettke and Coyne, 2003). There are cases too of formal policies put in place to transform a local culture (Lundström and Stevenson, 2005).

This seems to indicate that one must not use recursive models. Instead, one must use more realistic non-recursive models. If we employ a recursive model that violates the required assumptions and if we use OLS regression to estimate the coefficients of the model, the resulting estimates will be biased and

inconsistent. Thus, we will give an inaccurate assessment of the nature and the magnitude of the causal effects. This does not mean that we should specify models in which there are reciprocal influences between every variable i.e. a fully non-recursive model. To be useful in empirical research, a model cannot be fully non-recursive. Typically, some of the parameters of a non-recursive model must be assumed zero (Berry, 1984).

A necessary condition for identification is that the number of exogenous variables must be greater than the number of endogenous variables. Otherwise, the models become under-identified. A unique solution is not possible. There are an infinite number of possible solutions when there are more unknowns than there are equations.

In order to overcome this, I assume that EA can only affect institutions over the long term, longer than the period of 8 years for this panel data set. Similarly, informal and formal institutions affect one another only over the long term. Accordingly, I am able to relax the requirements of a fully non-recursive model.

As a starting point for analysing the complex social and economic issues associated with entrepreneurship, the mostly unidirectional account of causation adopted is not unreasonable. As a methodological matter, a piecemeal approach that provisionally treats some variables as relatively constant and free from the effects of feedback disturbances is an appropriate way to promote the growth of our knowledge about this area. Marshall (1938) argued that such simplifications have enabled science to make progress in dealing with complex and dynamic matter. That is, the approach tentatively takes some institutions as given for the purpose of current analysis, while at the same time acknowledging that, at another level of analysis, or over a longer period, those assumed absolutes might well undergo endogenous changes. Over the longer term, the system is fully interconnected (Williamson, 2000).

Reciprocal causation does not imply that the different causal elements must occur simultaneously. Indeed, with time lags, some causal factors take a while to kick in and to trigger reciprocal forces so that we do not have to consider every type of interaction all at once (Marshall, 1938).

1.6 Thesis outline

I organised the thesis as follows. Chapter 2 reviews the theory of entrepreneurship. Chapter 3 goes on to review the theory linking institutions to entrepreneurship. Chapter 3 also develops a framework that links institutions to conditions for EA. Then Chapter 4 reviews the theory of ED in light of the institutions-EA relationship. Chapter 5 reviews configurational theory and develops a conceptual framework consisting of five hypotheses. Chapter 6 discusses the research methodology and related methods to lend empirical support to the conceptual framework. Chapter 7 puts forward the results. The thesis ends with a discussion on the findings, implications, limitations, future research possibilities and conclusions derived from this research.

2. Entrepreneurship

This study analyses EA at a macro-level. In order to explain the effects of formal institutions on entrepreneurship and the conditions that influence this relationship, I first attempt to seek out theories of entrepreneurship useful for a macro-level analysis. Though I include a discussion of the individual level antecedents of EA, in the following Chapters I will link these to the macro level conditions related to ED and institutions.

I find that theories depicting entrepreneurship as an occupational choice (Lucas, 1978) useful since country level EA can be viewed as a consolidation of a series of individual occupational choices. In addition, I find it useful to define entrepreneurship as involving the sources of opportunity; the processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them (Shane and Venkataraman, 2000). The sources of opportunity fit in with my argument that the structural changes from an agricultural to a manufacturing to a services economy introduce numerous opportunities for potential entrepreneurs. In addition, the added description of entrepreneurship as discovery, evaluation and exploitation of opportunities enable me to fit in the role of institutional incentives in the entrepreneurial process. The constraints placed by both state and society on such individual behavior either hinder or support EA. Lastly, in order to operationalize the occupational choice or opportunity exploitation decision, the thesis considers the creation of new enterprise (Gartner, 1985) as an entrepreneurial event.

2.1 Theories of entrepreneurship

Currently there exists a diversity of definitions of entrepreneurship (see Table 1) and a multitude of empirical studies without a common basis - a weakness in the field of entrepreneurship. Entrepreneurship literature emphasises the role of the individual as the main decision-maker (Levie and Autio, 2011). However, this individual centric approach has not achieved notable success in identifying potential entrepreneurs or explaining variance in self-employment decisions across populations (Gartner, 1989).

Table 1: Summary of entrepreneurship definitions

Contributor	Period	Definition
Richard Cantillon	1710	Buying and selling at certain prices, thus undertaking a risk in exchange for profit
John-Baptiste Say	1801/1810	Using management talent to co-ordinate production
Carl Menger	1871	Entrepreneurship involves obtaining information, calculation, an act of will and supervision
Joseph Schumpeter	1910	Entrepreneurship is in its essence the finding and promoting of new combination of productive factors
Frank Knight	1921	Directing and controlling whilst bearing uncertainty
Harvey Leibenstein	1970	Entrepreneurship is the reduction of organisational inefficiency and the reversal of organisational entropy
Israel Kirzner	1975	The identification of market arbitrage opportunities
William Gartner	1985	The creation of a new business
Howard H Stevenson	1988	Entrepreneurship is the pursuit of opportunity beyond the resources currently under your control
Scott Shane and Sankaran Venkataraman	2000	It involves the sources of opportunity; the processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them
Zoltan Acs and Lazlo Szerb	2009	Entrepreneurship is the dynamic interaction of entrepreneurial attitudes, entrepreneurial activity, and entrepreneurial aspiration that vary across stages of economic development

Source: adapted from Kao et al (2011)

A definition gaining prominence over the last decade is Shane and Venkataraman's (2000, p218) explanation of entrepreneurship as the, "sources of opportunity; the processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them." They shifted the earlier individual-oriented approach to entrepreneurship to a process-oriented one, underlining the activities an entrepreneur engages in. From

Table 1, we note that this definition has its origins in the work of Kirzner (1975) and later Stevenson (1988). Another helpful definition locates EA as the “dynamic interaction of entrepreneurial attitudes, entrepreneurial activity, and entrepreneurial aspiration that vary across stages of economic development” Acs and Szerb (2009, p7). However, I find the definition of entrepreneurship that delineates EA as sources of opportunity, discovery, evaluation and exploitation more useful to build arguments on how my primary constructs of institutions and Ed influence cross-country variations in EA. The sources of opportunity fit in with my argument that the structural changes from an agricultural to a manufacturing to a services economy introduce numerous opportunities for potential entrepreneurs. In addition, the added description of entrepreneurship as discovery, evaluation and exploitation of opportunities enable me to fit in the role of institutional incentives in the entrepreneurial process. The constraints placed by both state and society on such individual behavior either hinder or support EA.

Gartner’s (1985) definition of EA as the creation of a new business forms the basis of many empirical studies. As a result, in the Methodology section, I look to Gartner’s (1985) definition to locate measures of EA.

I acknowledge that a consideration of entrepreneurship as start-up activity or new business creation has its limitations in fully accounting for EA. It does not consider the initiatives by employees in existing firms to undertake new business activities. Such initiatives, termed intrapreneurship, substitute for the decrease in EA in some highly developed countries (Bosma et al., 2010). Although intrapreneurship relates to corporate entrepreneurship, these concepts differ in the following sense. Corporate entrepreneurship occurs at the level of organizations and refers to a top-down process, i.e. a strategy that management can utilize to foster more initiatives and to achieve improvement from their workforce and organization. Intrapreneurship occurs at an individual level and refers to bottom-up, proactive work-related initiatives of individual employees (Bosma et al., 2010).

As noted earlier in Section 1.1, the S-shaped ED-EA relationship shows that the rate of increase in EA ultimately declines among advanced economies. Perhaps individuals among advanced economies are free to behave entrepreneurially

within existing companies and they enjoy high remunerations as a result. In such contexts, they might increasingly choose high-wage employment. In effect, an increase in intrapreneurship substitutes for start-up activity within such contexts. Start-up type of EA therefore declines. In the next Section, I look at the related occupational choice decision that faces entrepreneurial individuals.

2.2 Opportunity exploitation as occupational choice

The decision to exploit an opportunity by starting a new enterprise arises from the occupational choice of individuals at the start of or during their active working life (Kanniainen and Vesala, 2005). The economic literature (Lucas, 1978; Evans and Jovanovic, 1989; Banerjee and Newman, 1993; Aghion and Bolton, 1997), in particular, has favoured an explanation of opportunity exploitation based on the occupational choice decision. This perspective of EA emphasises the differences in a potential entrepreneur's endowments of education, social support and finance, and it considers them as rational beings who seek to maximise their economic and non-pecuniary utility (Blanchflower and Oswald, 1998). Nevertheless, this does not necessarily mean that those with the greatest capacity to be entrepreneurs will become them. Depending on how institutional conditions influence the distribution of profits between entrepreneurs and employees, potential entrepreneurs might decide to be either entrepreneurs or employees (Jovanovic and Gilbert, 1993).

Evident then is the need to explore the effect of institutional conditions on EA. North (1990) suggests that institutions affect the distribution of incentives. Moreover, the incentive or disincentive to make the occupational choice lies in the gap between the expected utility of opportunity exploitation and the opportunity cost of utilising one's time. Entrepreneurial ability plays a significant role in this gap.

Lucas (1978) introduced the notion of entrepreneurial ability differences to explain enterprise size distribution and growth. The gap increases when individuals have information and skills that enable them to exploit opportunities better because these will increase their returns to opportunity exploitation. Education increases an individual's stock of information and skills used for the

pursuit of an entrepreneurial opportunity. Skills are required to sell, bargain, lead, plan, make decisions, solve problems, organise a firm and communicate. Education also improves entrepreneurial judgement (Casson, 1995). Therefore, educated individuals are more likely to exploit opportunities than less educated individuals are (Reynolds, 1997).

Career experience also improves entrepreneurial ability. General business experience (Schoonhoven and Romanelli, 2001), industry experience (Aldrich, 1999), functional experience in marketing, product development or management (Roberts, 1991), and previous start-up experience (Holmes and Schmitz, 1993) all provide some of the information and skills that enhance entrepreneurial performance, thereby increasing the likelihood of opportunity exploitation.

In addition, the entrepreneurial ability of parents plays a role. Parental entrepreneurial experience increases the likelihood that a person will exploit an entrepreneurial opportunity because one can learn through observation of others, some of the information and skills useful for exploitation of an entrepreneurial opportunity (Delmar and Davidsson, 2000).

Entrepreneurial ability operates to influence the cognitive characteristics and self-efficacy of a country's potential entrepreneurs. Three cognitive characteristics influence the exploitation of opportunity. These are overconfidence, representativeness and intuition. Confident individuals are more likely to exploit opportunities because overconfidence leads individuals to take action in situations in which they do not have enough information to assess the likelihood of their success, but where further investigation would reveal the poor odds, short opportunity half-life, or low opportunity value facing them. Moreover, overconfidence leads people to follow their own information instead of heeding that provided for by others, to disregard disconfirming information and to misperceive the riskiness of actions (Arabsheibani et al., 2000).

Representativeness increases the likelihood of opportunity exploitation because it makes individuals likely to generalise in situations where little historical information guides decisions (Busenitz and Barney, 1997). This also applies

where greater effort to analyse information will not resolve uncertainty, where individuals are not experts, and where one needs quick action.

Intuitive decision-making increases the likelihood of opportunity exploitation because one can make the decision to exploit an opportunity under time pressure, uncertainty and limited information, all of which hinder analytical decision-making (Allinson et al., 2000).

Country-specific structural or cultural determinants may not be less important as a determinant of cross-country EA (Klyver et al., 2008). Access to information about the existence of the opportunity (Kirzner, 1973) is an important antecedent of cross-country EA. Social ties and networks play a key role in accessing information (Singh et al., 1999). Social status makes it easier for a person to convince others that they have identified a valuable opportunity, despite the uncertainty and information asymmetry present with such an opportunity (Dolton and Makepeace, 1990). Social ties increase the likelihood that people will exploit entrepreneurial opportunities because social contacts provide information useful to the exploitation process (Cromie and Birley, 1992). Cultural aspects might also play a role in non-pecuniary incentives in starting enterprises. Previous studies have also established that the profit motive may not fully capture the reasons why some people become entrepreneurs (Hamilton, 2000).

While ability and culture play a role in the individual decision to start an enterprise, an important antecedent of EA is the opportunity itself. Ability and culture matter little when opportunities are scarce.

2.3 Major sources of opportunity

Three major sources of opportunity include (i) technological changes, (ii) political and regulatory changes and (iii) social and demographic changes (Shane, 2003). Technological changes are important sources of opportunity because the introduction of new solutions to problems makes it possible for individuals to allocate resources in different and more productive ways (Blau, 1987). Political and regulatory changes are important sources of opportunity because they make it possible for individuals to re-allocate resources to new uses in ways that either are more profitable or redistribute wealth from one member of society to another

(Carrol and Hannan, 2000; Sine et al., 2001). Social and demographic changes are also important sources of opportunity because they facilitate the creation and transmission of information about opportunities, increase demand, and make possible opportunities that were otherwise not possible (Bygrave and Minniti, 2000). Some sources of socio-demographic type opportunities include urbanisation, population dynamics, and educational infrastructure (Shane, 2003).

Later in Chapter 3, I note that technological development underlies the very process of ED (Solow, 1957). Thus, if technology changes (Blau, 1987; Acs and Armington, 2004) give rise to opportunities then ED might affect the demand for entrepreneurs through an increase in such opportunities.

2.4 The context for opportunity exploitation

The fact that opportunities exist, does not necessarily mean that those with the greatest capacity to be entrepreneurs will become entrepreneurs (Jovanovic and Gilbert, 1993). Context plays a major role. This context includes the antecedents of EA such as work experience, education, social ties and networks and finance occur. The context for the exploitation of opportunity delineates into an industry and institutional context. These are explained next.

2.4.1 Industry context

Industry significantly influences the characteristics of opportunities. Eckhard (2003) found that some industries had a consistently higher percentage of start-up companies on the Inc. 500 and experienced more initial public offerings than other industries. The industry context also influences potential entrepreneurs (Georgellis and Wall, 1999). Shane (2003) observed that two individuals with the same characteristics, both psychological and otherwise, would make very different decisions about starting an enterprise if the first one experiences an industry that favours opportunity exploitation while the other experiences an industry context that hinders it.

There are five theoretical perspectives on industry level differences in the exploitation of entrepreneurial opportunities through the creation of new enterprises. These are (i) knowledge conditions, (ii) demand conditions, (iii)

industry life cycles, (iv) appropriability conditions and, (v) industry structure (Shane, 2003).

First, knowledge conditions (Winter, 1984) influence the level of entrepreneurial opportunity present in an industry, and include such factors as the research and development intensity of the industry, the reliance of innovation by small enterprises, the degree to which an industry depends on public sector institutions to innovate, and the level of uncertainty in the industry. Empirical evidence shows that EA occurs more commonly in industries that are more research and development intensive (Dean et al., 1998), where individuals tend to source innovative ideas outside of the value chain. For example, universities (Shane, 2001) have a greater level of small, micro and medium enterprise (SMME) start-ups (Acs and Audretsch, 1989; Audretsch and Acs, 1994).

Second, demand conditions (Kirzner, 1997) influence the level of EA in an industry, and include such factors as market size, market growth and market segmentation. Empirical evidence shows that EA occurs more commonly in industries that are larger, faster growing and more segmented (Dean et al., 1998).

Third, industry life cycles examine opportunity exploitation as a function of industry age, dominant design and the dynamic density of enterprises. Empirical evidence shows that EA occurs more commonly in industries that are younger (Barnett, 1997) and not yet converged on a dominant design (Baum et al., 1995). In addition, EA initially increases with the number of enterprises already in the industry and then declines when the number reaches a high level (Barnett, 1997).

Fourth, appropriability conditions examine the ability of entrepreneurs to capture the returns to opportunity exploitation as a function of patents, complementary assets and other methods of appropriating the returns to innovation. The empirical evidence shows that EA occurs more commonly in industries where patents are more important, and complementary assets in manufacturing, marketing, and distribution are less important in appropriating the returns to innovation (Shane, 2001).

Fifth, industry structure considers opportunity exploitation as a function of industry profitability, input costs, capital intensity, advertising intensity, industry concentration, and average enterprise size. Empirical evidence shows that EA occurs more commonly in profitable industries (Acs and Audretsch, 1989), have lower input costs (Carrol and Huo, 1986; Fonseca et al., 2001), are less capital and advertising intensive (Mata and Portugal, 1994), are less concentrated, and have lower average enterprise size (Dean et al., 1998).

2.4.2 Institutional context

The effect of the institutional infrastructure (Baumol, 1990) on productive EA divides into three categories of factors. These are (i) the economic environment, (ii) the political environment and (Westlii and Meyer) the cultural environment. All three sets of factors influence the exploitation of entrepreneurial opportunities.

First, within the economic environment four aspects influence the exploitation of entrepreneurial opportunities. These are (i) wealth, (ii) economic stability, (Westlii and Meyer) capital availability, and (iv) taxation. Evidence shows that societal wealth (Reynolds, 1994), economic stability (McMillan and Woodruff, 2002), capital availability (Pennings, 1982; Audretsch and Acs, 1994; Amit et al., 1998) all enhance opportunity exploitation. In addition, higher tax rates reduce opportunity exploitation (Gentry and Hubbard, 2000).

Second, within the political environment, through perceived risks and returns, three aspects influence the level of opportunity exploitation in a society. These are (i) political freedom, (ii) the system of property rights and (Westlii and Meyer) the centralisation of power. Strong political freedom, property rights and decentralisation of power enhances opportunity exploitation (Harper, 1997).

Third, the social and cultural environment influences the amount of opportunity exploitation that takes place in a society in three ways. By (i) influencing the degree to which community members consider EA desirable (Aldrich and Fiol, 1994; Blanchflower et al., 2001), (ii) affecting the number of entrepreneurial role models (Smith, 1992; Walstad and Kourilsky, 1998), and (Westlii and Meyer) through specific cultural beliefs (Begley et al., 1997) that encourage or discourage EA.

2.5 Summary

I find that the definition of entrepreneurship that best brings in the macro-level ED and institutional perspective is that defining it as involving the sources of opportunity; the processes of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them (Shane and Venkataraman, 2000). This perspective of entrepreneurship enables one to consider both opportunities and incentives. The fact that opportunities exist, does not necessarily mean that those with the greatest capacity to be entrepreneurs will become entrepreneurs (Jovanovic and Gilbert, 1993). The incentives matter. Broadly, the context for the exploitation of opportunity delineates into an industry and institutional context.

The industry and ED context are synonymous. For instance, sources of opportunity might arise from the technology changes experience by local industry (Blau, 1987; Acs and Armington, 2004). These changes underlie the process of ED. For instance, some industries have a consistently higher percentage of start-ups on the Inc. 500 and experience more initial public offerings than other industries (Eckhard, 2003). Two individuals with the same characteristics, both psychological and otherwise, would make very different decisions about starting an enterprise if the first one experiences an industry that favours opportunity exploitation while the other experiences an industry context that hinders it (Shane, 2003). Thus, one can argue that ED might affect the demand for entrepreneurs through an increase in such opportunities

I find the decision to exploit an opportunity synonymous with occupational choice (Lucas, 1978). Country level EA aggregates a series of individual occupational choices. This perspective emphasises the differences in a potential entrepreneur's endowments of education, social support and finance, and it considers them as rational beings who seek to maximise their economic and non-pecuniary utility (Blanchflower and Oswald, 1998). All of these traits are, in part at least, skills that individuals must develop. A country's economic structure and its institutional environment can either encourage or discourage this, and so determines, in part at least, its level of EA. For instance, the occupational decision depends on both the opportunities available through ED as well as the

incentives provided by the state and the local society. In this way, one can incorporate the institutional perspective into a study of cross-country differences in EA.

Depending on how institutional conditions influence the distribution of profits between entrepreneurs and employees, potential entrepreneurs might decide to be either entrepreneurs or employees (Jovanovic and Gilbert, 1993). The effect of the institutional infrastructure (Baumol, 1990) on productive EA divides into three categories of factors. These are (i) the economic environment, (ii) the political environment and (Westlii and Meyer) the cultural environment. All three sets of factors influence the exploitation of entrepreneurial opportunities. Later, in Chapter 4, I note that the political and economic environment align with formal institutions while the cultural environment aligns with informal institutions (North, 1990).

With formal institutional reforms having taken place among post-communist nations and increasingly implemented among African and Latin American countries, it will be useful to examine the effectiveness of these reforms. As suggested earlier, the conditions among which these reforms take place include the local cultural context as well as the economic structure. Implicit here then is an interaction between formal and informal institutions. In addition, this interaction might vary depending on surrounding conditions of economic structure. In other words, the effectiveness of the incentives put in place by governments relies on the local societal incentives. However, even when local societal incentives are adequate, EA might increase little if the surrounding economic structure provides few opportunities.

Lastly, in order to operationalize the occupational choice or opportunity exploitation decision, the thesis considers the creation of new enterprise (Gartner, 1985) as an entrepreneurial event.

3. Entrepreneurship and institutions

Considering this research examines the formal institutions-EA relationship, I now review the theory of institutions and develop a framework to link institutions to conditions for EA. I argue that the formal institutions-EA relationship relies on the level of informal institutions such as the local culture. There are two schools of thought on institutional theory—an economic angle starting from North (1990) and a sociological one stemming from Scott (1995). In this thesis, I follow the economic angle.

3.1 Institutional theory

Institutions are important in determining the level of EA. Rules, regulations, property rights, and their enforcement matter because they affect transactional trust. Transaction trust includes the degree of trust the parties to a business transaction place in each other. Therefore, government matters because it establishes and enforces rules, regulations, and property rights. Good government raises transactional trust and so facilitates entrepreneurship. Culture also matters. For instance, authoritarian and hierarchical societies fail to honour self-made success, and social status forms part of the payoff to entrepreneurs. Other basic institutions like universal basic education also matter in that it lets latent entrepreneurs realize that opportunities exist. Openness to the outside world lets in foreign ideas and opportunities along with foreign goods and capital. Diversity also matters because it opens minds to new ideas. These factors all affect entrepreneurship because they stimulate information exchange. New ideas are a necessary condition for successful entrepreneurship (Fogel et al, 2006).

Before going any further, I will first clarify the term, institutions. Still, there exists no agreed-upon framework on how to organise the various institutions (Hirsch and Lounsbury, 1997). Whilst North (1990) delineates institutions into formal and informal rules, DiMaggio and Powell (1983) delineate them into three isomorphic processes viz. coercive, mimetic, and normative. Yet further, Scott (1995) delineates them into regulatory, cognitive and normative institutions. Table 2 below expands on these various forms of institutions.

Table 2: Delineation of institutions

Form of institution	Description	Source
Formal	Comprise of statutes, constitutions, common law, and other governmental regulations. They determine the governance structure, individual and property rights, contracts, and the enforcement system. They are enacted, changed, and enforced by legislators, judges, bureaucrats, and other rule-makers.	North (1990)
Informal	Customs, moral values, religious beliefs, and other norms of behaviour that have stood the test of time	North (1990)
Regulatory	Formally codified, enacted, and enforced structure of laws in a community, society, or country. Based on experience.	Scott (1995)
Cognitive	Beliefs about the expected standards of behaviour that is specific to a culture. Based on shared understandings or taken-for-grantedness.	Scott (1995)
Normative	Manifest in standards and commercial conventions such as those established by professional and trade associations, and business groups. Based on social obligation.	Scott (1995)
Coercive process	Results from both formal and informal pressures exerted on organizations by other powerful organisations and by cultural expectations in the society within which organisations function. Such pressures may be felt as force, as persuasion, or as invitations to join in collusion. In some circumstances, organisational change is a direct response to government mandate.	DiMaggio and Powell (1983)
Mimetic process	When organizational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organisations may model themselves on other organisations.	DiMaggio and Powell (1983)
Normative process	Stems primarily from professionalization viewed as the collective struggle of members of an occupation to define the conditions and methods of their work, to control production and to establish a cognitive base and legitimation for their occupational autonomy.	DiMaggio and Powell (1983)

North (1990, p.3) defines institutions as “the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction.” A government sets up and enforces formal institutions. It is an institution. Government and those who influence it control many institutional features that

influence EA, like laws and regulations. Government also influences features like law enforcement and judicial efficiency. However, features like culture and religion lie outside the control of government except perhaps in the very long run (Fogel, 2006).

For example, government designed institutional features constrain EA. They impede information flow, raise information costs, and erode the gains from information. These can include lax accounting standards and disclosure requirements, weak property rights protection, an inefficient judiciary, and ambient corruption. Besides their direct negative impact on the information seeking aspect of EA, these institutional deficiencies also retard capital market development, which further dampens EA. They render markets less competitive, diversified, and developed, and this reduces economic pressures on established firms to explore new opportunities, like innovatively entering vertically related lines of business (Fogel, 2006). While institutions might lessen the uncertainty faced by the entrepreneur, they also make the actions of others such as resource providers and competitors predictable (Boettke and Coyne, 2003).

According to Peng et al (2009), the scheme of formal and informal institutions complements Scott's (1995) idea of three supportive pillars: regulative, normative, and cognitive. Formal institutions correspond to the regulative pillar while informal institutions correspond to both normative and cognitive pillars. While the cognitive pillar corresponds specifically to the cultural aspect of informal institutions, the normative pillar corresponds particularly to the norms within informal institutions.

Though both normative and cognitive institutional pillars draw on culture, there are differences between them (Bruton, 2010). The normative pillar represents actions that businesses and individuals ought to take. They include the standards of behaviour and commercial conventions of different professions, occupations, and organizational fields. A normative evaluation of legitimacy will show whether the business's activities are proper and consistent with influential groups and societal norms. The cognitive institutional pillar includes the scripts, schemas, and taken-for-granted elements that influence individuals in a particular socio-cultural context. A cognitive evaluation of legitimacy concerns the congruence

between a business and its cultural environment (Peng et al, 2009). For the purposes of this research, both normative and cognitive pillars are informal in nature.

This thesis uses North's (1990) delineation of institutions because of its parsimony, as well as its economic arguments associated with the use of economic structure as an explanatory variable of EA. Formal institutions are codified. They include constitutions, laws, and regulations. In contrast, informal institutions lack formal codification and include conventions, norms, and traditions. While the force of law backs formal institutions, social custom enforces informal institutions. In addition, formal institutions are visible. For instance, countries can alter constitutional law comparatively quickly to adapt to changing economic circumstances. In contrast, informal institutions are the invisible norms, values and acceptable behaviours (Coyne and Sobel, 2010; Sobel and Coyne, 2011). One can change formal institutions more easily than informal institutions (Williamson, 2000).

Informal institutions embody society's perceptions about the world, the accumulated wisdom of the past and current set of values. Informal institutions are thus part of a society's culture (North, 1990). Culture is the 'software of the mind' and formal institutions are themselves 'products of the dominant cultural value systems' (Hofstede, 2001, p255). They are sustained through generations by various transmission mechanisms such as imitation, oral tradition, and teaching. The enforcement of informal rules occurs by means of sanctions such as expulsion from the community, ostracism by friends and neighbours, or loss of reputation (Pejovich, 1998).

Formal institutions can emerge in response to changes in economic conditions, such as new markets, knowledge and supply sources. Such changes result in new opportunities for human interactions. Potential entrepreneurs will seek new contractual arrangements to exploit these opportunities. Market friendly contractual arrangements have the potential to become institutions when they result in sustained and lower transaction costs. For these new formal institutions to be sustainable, they should be aligned with the prevailing informal institutions (Pejovich, 1998).

3.2 A framework for linking institutions to conditions for EA

In order to explore extant theories and to facilitate the gathering of empirical evidence later in this thesis, I look for manifestations of institutions within extant entrepreneurship theory. As a result, I come up with a framework linking formal and informal institutions to conditions for EA. The literature on entrepreneurship has thus far not explicitly linked formal and informal institutions to EA. Conditions for EA might include human capital (HC), social capital (SC), financial capital (FC) and opportunities and incentives (O&Is). These conditions of HC, SC, O&Is and FC are related to antecedents of EA such as work experience, education, social ties and networks, finance and the opportunities themselves. Figure 3 below, shows the links between institutions and conditions for EA.

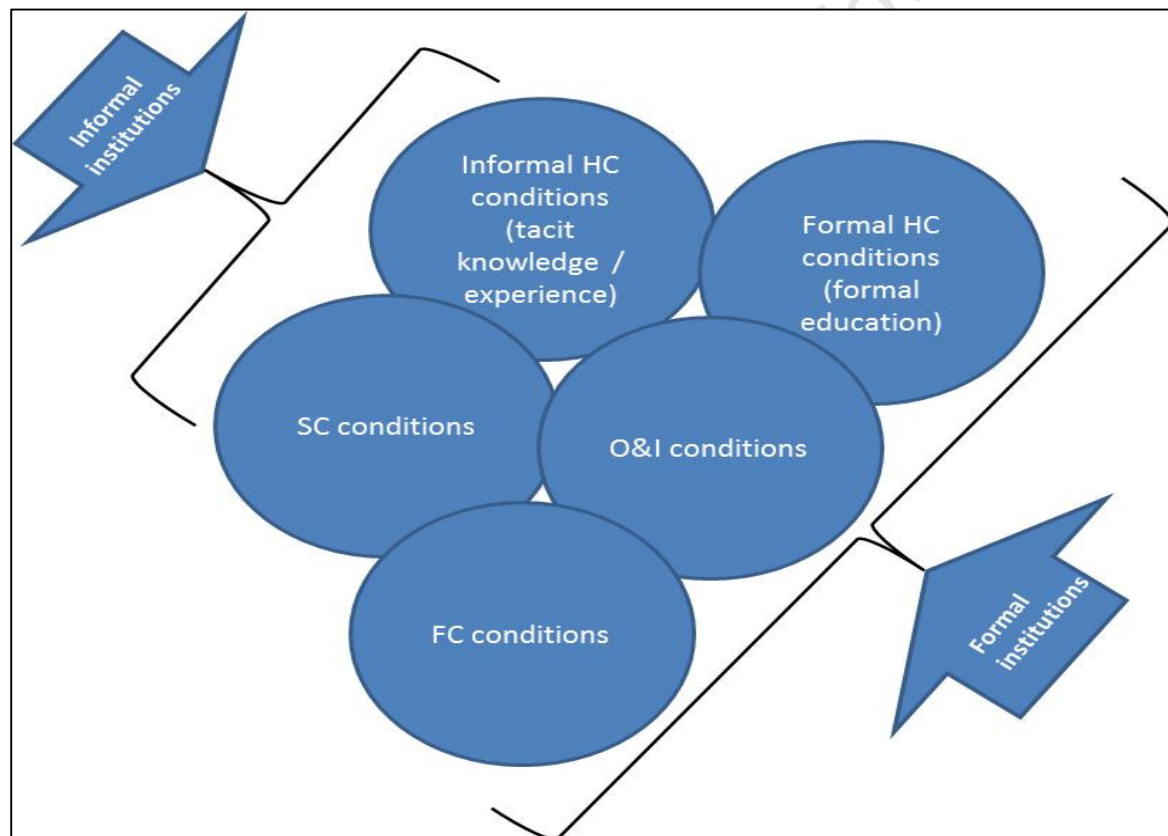


Figure 3: Links between institutions and conditions for entrepreneurship

The opportunity exploitation process relies on entrepreneurial antecedents such as work experience, education, social ties and networks as well as access to financial resources by potential entrepreneurs. Broad support for these as conditions for EA occurs within the literature on entrepreneurship policy and

occupational choice (Malecki, 1993; Blanchflower and Oswald, 1998; Verheul et al., 2001; Lundström and Stevenson, 2005; Reynolds et al., 2005; Hoffmann and Gabr, 2006). In the sub-sections to follow, I explain further these conditions and their links to the respective institutions. Figure 8, above shows that tacit HC and SC conditions link to informal institutions and FC, O&I and explicit HC conditions link to formal institutions. For example, while high levels of formal institutions result in opportunities for EA, informal institutions influence the perceptions of these opportunities (Welter and Smallbone, 2003).

3.2.1 Social capital conditions

Informal institutions comprise of customs, moral values, religious beliefs, and other norms of behaviour that have stood the test of time (North, 1990). SC associates with informal institutions (Knowles, 2006), since it includes relationships as well as associated norms and values (Coleman, 1988; Putnam, 1994). Nahapiet and Ghoshal (1998) define SC as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.

According to Coleman (1988), SC comprises of three forms. One form includes the ability of information to flow through a community and provide a basis for action. Another more relational form includes the obligations and expectations that depend on the trustworthiness of the environment. Lastly, it includes the existence of norms and related sanctions. Nahapiet and Ghoshal (1998) framed SC as consisting of three dimensions: (1) the relational dimension (trust, identification and obligation); (2) the cognitive dimension (shared ambition, vision and values); and, (3) the structural dimension (strength and number of ties between actors).

Structural SC concerns the properties of the social system and the network of relations as a whole (Nahapiet and Ghoshal, 1998). Thus far, researchers have examined SC by means of network characteristics, information and knowledge sharing, and the strength of social interactions (Carey et al, 2011)

Relational SC refers to the trust, obligation, and identification present in personal relationships between people (Nahapiet and Ghoshal, 1998). Trust increases the

willingness of parties to engage in cooperative activity through which further trust can be generated (Fukuyama, 1996). Trust precedes resource acquisition and knowledge combination and exchange. Therefore, those who develop a high degree of trust can more likely appropriate the knowledge, information, and other resources available in their social network. One thus expects, relational SC to enhance EA.

Cognitive SC refers to those resources providing shared representation, interpretations, and systems of meaning among parties (Nahapiet and Ghoshal, 1998). They represent culturally supported habits. They gain legitimacy through subconsciously accepted rules and customs as well as taken-for-granted cultural account of EA. Although carried by individuals, cognitive programs are elements of the social environment (Berger and Luckman, 1991). Thomas and Mueller (2000) associate risk tolerance and independence to culture. Thus I suggest that these are associated with cognitive SC. Hofstede (2001) describes individualism as the relationship between the individual and society or group, while uncertainty avoidance relates to norms, values and beliefs regarding a tolerance for ambiguity and risk.

The forms of SC are not mutually exclusive. Relational SC associates with the common belief system in cognitive SC, and the associated ability of actors to make sense of common experiences (Nahapiet and Ghoshal, 1998). Adherence to the associated norms of behaviour breeds trust as the parties identify and conform to the shared ideologies underpinning the relationship. Relational SC will unlikely accrue if one party does not understand another (Adler and Kwon, 2002).

Structural and relational SC operates to facilitate the access to information about the existence of the opportunity (Singh et al, 1999; Kirzner, 1973), an important antecedent of EA. An individual's social status in particular makes it easier to convince others that they have identified a valuable opportunity, despite the surrounding uncertainty and information asymmetry (Dolton and Makepeace, 1990). Social ties increase the likelihood of opportunity exploitation because social contacts provide information useful to the exploitation process (Cromie and Birley, 1992).

Cognitive SC influences EA through the different value systems that influence views of occupational choice (Thomas and Mueller, 2000). The degree to which members of the community consider EA desirable also influences the amount of opportunity exploitation (Aldrich and Fiol, 1994; Blanchflower et al., 2001). The number of individuals considered as entrepreneurial role models also influence EA (Smith, 1992; Walstad and Kourilsky, 1998).

Part of the economic differences in countries arises from their different orientations in cognitive SC (Earley and Gibson, 1998; Dennis Jr., 2011). For instance while some countries contain an individualistic society, others might contain a collectivist society. Individualistic societies contain social ties that are loose. Within collectivist societies, potential entrepreneurs integrate into strong, cohesive in-groups from childhood onwards (Hofstede, 1991). This cohesiveness builds from a common set of goals, norms and values (Etzioni, 1968). For instance, values of individualism and power distance are often associated with cross-country differences in rates of inventiveness (Shane, 1991). In societies with high individualism, bankers might favour entrepreneurs with risk taking and independent thinking behaviour.

The relational SC or trust referred to in this thesis includes generalised trust or trust in strangers. This helps individual self-determination. While at face value one expects increasing trust to be in harmony with collectivist societies, their hierarchical nature (Tabellini, 2010) and restricted within-group associations actually limits trust (Olson, 1982).

Particularly in large and mobile societies, where personal knowledge and reputation effects are limited, a sizable proportion of potentially mutually beneficial transactions will involve parties with no prior personal ties. In societies in which strangers can trust one another to act in the collective interest, they can contract with a wide range of parties without drafting lengthy written agreements and operate enterprises without devoting too much time in monitoring employees, partners, and suppliers. Such individuals might also be more likely to support efficient economic policies than those within low-trust societies might, whether or not they increase one's personal income (Knack, 2001).

Whereas Putnam (1994) views the market as undermining civil society, McCloskey (2006) contends that markets and exchange nourish and cultivate individual character, virtues, and ethics for the better. On the contrary, the concept of SC steeped in collectivism and egalitarianism includes communities that have developed customs and common values along ethnic lines. Interactions within most ethnic groups are thus subject to rules of behaviour that do not necessarily apply in dealings across ethnic lines (Pejovich, 1998). Within-family trust, intra-ethnic trust, or other forms of specific trust might hinder generalised trust (Fukuyama, 1996). This might lead to segmented markets, reducing gains from specialisation and perhaps from economies of scale (Greif, 1994). Meadowcroft and Pennington (2007) side with McCloskey and suggest that global expansion of markets has allowed communities that have little in common to connect by trade, thus leading to the development of a more inclusive 'bridging' SC.

Williamson (2011) argues that the market processes prevalent in individualistically oriented societies actually enhance the trust that underlies relational SC and the structural SC that supports the same relational SC. She suggests that trade provides individuals with new alternatives and opportunities. Therefore it increases self-autonomy and "locus of control," increasing individual self-determination. The market increases the choice set facing individuals, giving them increased control over their lives and empowering individuals. A related benefit of economic exchange interactions is that integration reduces transaction and information costs. Such economic relationships create commonalities reducing the costs associated with interaction and exchange. These reduced transaction costs lead to increased interaction, fostering trust and respect, contributing to the growth of social networks and the extent of the market.

3.2.2 Human capital conditions

HC results from not only formal education, but also from experience and practical learning at the workplace. It also results from non-formal education, such as specific training courses. Thus, broad labour market experience, as well as specific career oriented experience, increases HC (Becker, 1964). I consider the tacit HC developed through practical experience as a manifestation of informal

institutions and the more explicit HC developed through formal education as a manifestation of formal institutions.

HC theory suggests that knowledge contributes to cognitive abilities, enabling more productive and efficient activity (Becker, 1975). Therefore, potential entrepreneurs with more or higher quality HC should be better at perceiving profitable opportunities for EA. Prior knowledge and previous work experience are two dimensions of HC that play a significant role within the entrepreneurial process (Davidsson and Honig, 2003). Citizens' idiosyncratic prior knowledge and work experience enable them to recognize market gaps and assess the economic potential of a new opportunity (Venkataraman, 1997). Often the education and tacit learning of the work environment are influenced by the socialisation processes arising from prevalent informal institutions like customs, moral values, religious beliefs, and other norms of behaviour that have stood the test of time (Mantzavinos et al., 2004). The reverse is also true. Policymakers can influence cultural changes through HC development over a longer term.

HC fits in with both formal and informal institutions. Davidsson and Honig (2003) categorise HC as tacit and explicit. Tacit knowledge refers to expertise, the often non-codified components of activity. Explicit knowledge consists of the information normally conveyed in procedures, processes, formal written documents and educational institutions. Learning from peers, and in some cases learning from parents who are business owners, is a form of tacit knowledge development considered here as a manifestation of an informal institution. Explicit, codified knowledge in the form of school syllabi is considered here as a manifestation of a formal institution.

3.2.2.1 Explicit HC

Legislators, judges, bureaucrats, and other rule-makers enact, change and enforce formal education policies (North, 1990). They help entrepreneurs accumulate the explicit knowledge that provides skills to start a business. Empirical research shows that education frequently produces nonlinear effects in supporting the probability of becoming an entrepreneur (Davidsson, 1995; Gimeno et al., 1997; Honig, 1996; Reynolds, 1997). The returns to education for

men are conditional on both the industry and higher levels of education. Education seems to be particularly important for female entrepreneurs (Honig, 1998; Bates, 1995).

Lucas (1978) introduced the notion of HC differences to explain enterprise size distribution and growth. The gap increases when individuals have information and skills that make them better able to exploit opportunities because these will increase their returns to opportunity exploitation. Education increases an individual's information and skills that usefully exploit an entrepreneurial opportunity. Education also improves entrepreneurial judgement (Casson, 1995). Therefore, people that are more educated are more likely to exploit opportunities than less educated people are (Reynolds, 1997).

Education and training systems contribute to high levels of venture scripts when they encourage individuals to be more entrepreneurial (Vesper and Gartner, 1997). Institutions included here are the education and training system, and the labour market (Whitley, 1999). Empirical evidence shows that education influences the decision to start an enterprise (Robinson and Sexton, 1994). This willingness to start an enterprise arises from an increase in self-efficacy from possessing both specific technical and general knowledge.

The availability of educational institutions affects rates of EA among nations (Bowen and De Clercq, 2008a). In the US, regions with a high density of educated individuals have above average rates of EA. The level of education of entrepreneurs associates with long prospering enterprises, especially for college graduates compared to those with less than a four-year degree (Doms et al., 2010).

3.2.2.2 Tacit HC

Tacit knowledge can result from practical experience. It includes the norms and conventions, shaped by an individual's experience (Boettke et al, 2008). This type of tacit HC might represent a better 'guide' for entrepreneurs to identify opportunities than formal education alone. Individuals use their practical experience to obtain knowledge on where to find opportunities. These individuals can identify an opportunity that those who rely solely on their education might

ignore (Ucbasaran et al, 2008). The development of tacit HC through years of work experience might enhance one's expertise and thus the confidence to take risks in starting a business within ones area of expertise. Thomas and Mueller (2000) associate risk tolerance and independence to culture. Tacit HC thus associates with cognitive SC.

Entrepreneurial ability is a manifestation of a cognitive (Scott, 2001) or informal (North, 1990) institution. Cognitive institutions include information about market-based competition or knowledge about how to exploit new business opportunities (Spencer and Gomez, 2004; Manolova et al., 2008). Since HC relates to awareness and knowledge, I consider it a manifestation of cognitive institutions. In advanced market economies there seems to be a restructuring and deepening of informal institutions not in the form of rules and regulations to substitute or complement the market and the state but in the form of tacit knowledge (Stiglitz, 2000). From this perspective, HC conditions have the potential to be a key manifestation of informal institutions.

Experience from general business (Schoonhoven and Romanelli, 2001), industry (Aldrich, 1999), and prior entrepreneurial initiatives (Holmes and Schmitz, 1993) provide the tacit knowledge to enhance EA. In addition, functional experience in product development, marketing, or management (Roberts, 1991) also provides the tacit knowledge required to start enterprises. Studies show that labour market experience, including management experience and previous entrepreneurial experience relate significantly to EA, particularly when controlling for factors such as industry and gender (Gimeno et al., 1997; Bates, 1995).

Like any societal knowledge, meaning and value of entrepreneurship are also formed, learned, and transmitted through interaction with other societal members, like those at the workplace. Societies that value entrepreneurship include stories of successful entrepreneurs as part of collective knowledge (Hegele and Kieser, 2001). These cultural heroes demonstrate that self-determination can combine with social interest (Malach-Pines et al., 2005).

3.2.3 Opportunity and incentive conditions

In the modern theory of entrepreneurship, opportunities are real and independent of the entrepreneurs who perceive them. Opportunities are objective but the perception of opportunities is subjective (Hayek, 1937). Knight (1921) expressed the same idea in somewhat different language when he introduced his distinction between objective risks and subjective uncertainty and identified uncertainty-bearing as the economic function of the entrepreneur.

While Stevenson and Jarillo (1990) considered the opportunity itself to create the incentive, Shane and Venkataraman (2000) clarify incentives as profitmaking opportunities. For instance, if incentive structures distorted through high taxes, EA is less likely to occur (Kirzner, 1997). Since the expected profit opportunities accruing from entrepreneurship are the result of knowledge not commercialized by the incumbent firms, the magnitude of new knowledge shapes entrepreneurial opportunities but the commercialization capabilities of incumbent firms constrains them (Acs et al, 2009a). In this process of opportunity existence and the perception of opportunities, it seems then that the concept of incentives most usefully explains the perception of opportunities as sources of profit.

Hoffmann and Gabr (2006) consider opportunity conditions being influenced by formal policies and regulations involving deregulation, removal of entry barriers, access to foreign markets, procurement regulation, national and global demand conditions, knowledge transfer and test facilities. The same researchers consider incentives arise from formal policies and regulations involving personal income tax, corporate taxes, fiscal incentives, social security discrimination, administrative burdens, labour market regulation, bankruptcy legislation, campaigns, and initiatives towards specific groups. Since all of these represent largely formal instruments under the control of governments, I thus consider both opportunities and incentives as a manifestation of formal institutions. Since all of these instruments form part of policies and/or regulations I have decided to consolidate opportunities and incentives into a single factor "O&Is".

O&I conditions and actual opportunities have different but related meanings in this thesis. Opportunities refer to the actual products and services, new ways of

organising, new raw materials, new markets and new production processes (Ruef, 2002) that potential entrepreneurs could deliver as part of their business propositions. On the other hand, O&I conditions refer to macro-level conditions that influence whether individuals will exploit opportunities. These O&I conditions arise from both economic and political environments. Within the economic environment, aspects that influence the exploitation of entrepreneurial opportunities include wealth, economic stability, capital availability, and taxation. For example, higher tax rates reduce opportunity exploitation (Gentry and Hubbard, 2000). Within the political environment, aspects that influence the level of opportunity exploitation in a society include political freedom, the system of property rights, and the centralisation of power. Strong political freedom, property rights and decentralisation of power enhance opportunity exploitation (Harper, 1997).

O&I conditions affect EA in various ways. For example, strict labour regulations make it difficult for entrepreneurs to marshal the necessary human resources (Djankov et al., 2008b; Leung et al., 2008). They thus constrain entrepreneurs wishing to enter into labour-intensive industries (Klapper et al., 2007). Similarly, tax regulations also hinder EA (Djankov et al., 2008a). Over the longer term, changes in tax rates can potentially explain changes in EA rates. Changing tax rates and other regulatory burdens add to the uncertainty of EA and are a deterrent especially among less developed countries (Acs and Virgill, 2010).

The regulatory protection of intellectual property incentivises entrepreneurs (Bowen and De Clercq, 2008b; McMullen et al., 2008; Sobel, 2008). It gives them a certain period to earn monopoly type profits. Particularly within a less developed country context, the ineffective legal enforcement of contracts and property rights frustrates potential entrepreneurs (Ahlstrom et al., 2000; Peng and Zhou, 2005; Naudé, 2010). On the other hand, tedious and time-consuming administrative formalities and bureaucracy can alter a potential entrepreneur's occupational choice decision and thus decrease EA (Klapper and Rajan, 2006).

Recently, Alvarez et al (2011) used the GEM EFC definitions to classify as formal institutions, conditions for entrepreneurship such as government policies, government programmes, R&D transfer, market openness, and intellectual

property rights. Markets and transactions more generally cannot function well in the absence of economic governance. Good governance secures the property rights, which incentivises individuals to save and invest. This encourages them not to fear that others will deprive them of the fruits of these activities. Good governance precedes the enforcement of contracts where potential entrepreneurs fear for example clients that fail to fulfil their promised role in the transaction, but instead act opportunistically.

Conditions for O&Is that are related to this thesis's modernisation perspective of ED (see Chapter 3) include the new technologies, the changes in consumer demand (Reynolds et al., 1994) due to high disposable incomes and the dominant economic structure. High or rising income and wealth levels enhance consumer demand (Jackson, 1984). Increasing income levels lead to a higher variety in the demand for goods and services making the introduction of new products less risky. Technological developments enable entrepreneurs to provide services in a different way and perhaps reduce the costs of production. Technology can raise awareness and thus influence demand (Verheul et al., 2001). New technologies associate with the R&D capacity of a country.

Numerous opportunities and related incentives for starting a business associate with technology diffusion, knowledge spillovers, imitation and the proximity of enterprises in a cluster. Among less developed countries, very small enterprises in agriculture, retailing, and craft will dominate. On the other hand, among developed countries, a shift from manufacturing to services creates opportunities since in many service industries economies of scale and other barriers to entry are lower than in manufacturing. In addition, the high disposable income among developed countries increases consumer affordability in turn giving rise to greater entrepreneurial opportunity (Jackson, 1984).

Formal institutions stimulate technological developments associated with ED through privatization policy, competition policy and company legislation. Governments also stimulate technological progress through subsidizing R&D activities. Privatization policy can create opportunities for entrepreneurship in formerly public sectors such as health care and education. Competition policy

improves the accessibility of markets by reducing the market power of large enterprises and lowering entry barriers for new and small enterprises.

3.2.4 Financial capital conditions

FC may include the entrepreneur's own savings as well as external sources of finance like debt, venture capital, angel financing and external shareholdings. Though the FC of entrepreneurs has an individual basis, GEM researchers have tended to explore the external sources of finance regulated by law and accompanied by formal contracts. The GEM finance EFC probes for equity funding, debt funding, government subsidies, funding available from private individuals (other than founders), venture capitalist funding, and funding available through IPOs. Recently, Alvarez et al (2011) used the GEM EFC definitions (Bosma and Levie, 2010) to classify FC conditions as a manifestation of formal institutions. Others like Welter (2005) have also considered the financial system of a country as a formal institution. Thus formal institutions manifest in FC conditions. Technology opportunities arising from modernisation require substantial externally-sourced funding.

Finance is a key antecedent of EA (see Chapter 2). The returns and the borrowing constraints faced by potential entrepreneurs determine the occupational choice made at each level of wealth (Banerjee and Newman, 1993). An entrepreneur's access to finance affects her or his entry decision (Berman and Héricourt, 2010). FC also moderates the effect of one's entrepreneurial orientation on business performance (Wiklund and Shepherd, 2005). Policies that increase access to bank finance, the creation of investment companies, low interest rates and credit guarantee schemes contribute significantly to the promotion of new enterprises (Gnyawali and Fogel, 1994).

Excessive reliance on internal funds indicates inefficient financial intermediation (Schwab, 2009). Public policymakers can enhance the FC available to entrepreneurs by influencing the efficiency of the financial market. Efficient financial markets reduce the reliance on internal funds and money from informal sources such as family and friends by connecting entrepreneurs to a broad range of lenders and investors. Inadequate financing possibilities create difficulties in

meeting short-term payments for labour and supplies as well as longer-term investments. The use of banks to finance investments or working capital indicates access to credit. Excessive loan collateral requirements are likely to constrain investment opportunities by entrepreneurs.

The liquidity of financial systems influences the mix of debt and equity used by the entrepreneur (Whitley, 1999). A consideration of FC at a country level should involve the relative size of its stock market compared to its banks, the intensity of activity in stock markets compared to the banking sector, and the efficiency of stock markets compared to the banking sectors (Beck et al., 2005). Behind an equity-based financial system are generally large and liquid stock markets, which mobilize and distribute capital through market processes. Behind debt-based financial systems are banks and long-term credit institutions. Such institutions often use administrative processes targeted at certain market sectors and activities to allocate capital (Whitley, 1999).

FC through debt is often a crucial determinant of EA (Evans and Leighton, 1989). However, high interest rates are likely to discourage potential entrepreneurs from EA, because of the costs and risks involved. Increases in interest rates have the effect of increasing the opportunity costs of EA. As interest rates increase, financial risk increases due to the risks of liability and redemption and because interest payments on debt have to be paid when due, irrespective of the enterprise's profitability or liquidity levels. Often, personal finance will not meet the costs of EA, forcing potential entrepreneurs to use debt (Verheul et al., 2001).

FC through venture capital sources has become important to especially innovative start-ups with a high-risk profile. Venture capitalists and angel investors use their skill to identify profitable start-ups by designing selection systems that meet their own risk-reward profiles (Brandl and Bullinger, 2009).

3.3 Summary

I have adopted North's (1990) delineation of institutions because of its parsimony and the largely economic context of this research. This delineation suggests that institutions are comprised of formal and informal constraints. While governments

can control formal institutions, informal institutions like culture lie outside the control of government except perhaps in the very long run.

Formal institutions influence EA through their effects on information flows and transactional trust (Fogel, 2006). When governments are able to increase transactional trust and ease the exchange of information, entrepreneurs their clients and their resource providers face less uncertainty. Such contexts will tend to enjoy higher levels of EA. However, several researchers (Pejovich, 1998; Williamson, 2000; Boettke and Coyne, 2003) argue that for these new formal institutions to be sustainable, they should align with the prevailing informal institutions. Informal incentives - embodied in customs, traditions, and codes of conduct - are more resistant to the deliberate policies and regulations of formal institutions. Accordingly, informal institutions will change more slowly over time than will formal institutions (North, 1990; Jutting et al, 2007). Formal institutional reforms that are supportive of EA might thus be thwarted when informal institutions do not support of EA. It might take considerable time before informal institutions adapt having observed the benefits of EA.

I also find that the literature on entrepreneurship has not explicitly linked formal and informal institutions to EA. There is extensive literature on conditions for EA such as HC, SC, FC and O&Is. Aside from developing theoretical arguments, associating EA conditions to institutions will ease the location of empirical evidence. This is evident in the relationship between these conditions and the antecedents of EA such as work experience, education, social ties and networks, finance and the opportunities themselves.

Manifestations of informal institutions include tacit HC and SC conditions. Tacit knowledge includes learning from peers, and in some cases learning from parents who are business owners. SC has the relational dimension (trust, identification and obligation), the cognitive dimension (shared ambition, vision and values) and, the structural dimension (strength and number of ties between actors). The relational SC or trust referred to in this thesis includes generalised trust or trust in strangers, in harmony with individual self-determination. While at face value one expects increasing trust to harmonise with collectivist societies,

their hierarchical nature (Tabellini, 2010) and restricted within-group associations actually limits trust (Olson, 1982).

Manifestations of formal institutions include explicit HC conditions like the quality of formal education as well as FC and O&I conditions. Explicit, codified knowledge in the form of school syllabi is considered here as a manifestation of a formal institution. Individual and property rights, contracts, and an enforcement system underlie O&Is. FC includes the entrepreneur's own savings as well as external sources of finance like debt, venture capital, angel financing and external shareholdings. Researchers have tended to explore the largely external sources of finance regulated by law and accompanied by formal contracts.

O&I conditions and actual opportunities have different but related meanings in this research. Opportunities refer to the actual products and services, new ways of organising, new raw materials, new markets and new production processes (Ruef, 2002) that potential entrepreneurs could deliver as part of their business propositions. In this thesis, O&I conditions refer to macro-level conditions that influence whether individuals exploit opportunities. These O&I conditions arise from both economic and political environments. Within the economic environment, aspects that influence the exploitation of entrepreneurial opportunities include wealth, economic stability, capital availability, and taxation. For example, higher tax rates reduce opportunity exploitation (Gentry and Hubbard, 2000). Within the political environment, aspects that influence the level of opportunity exploitation in a society include political freedom, the system of property rights, and the centralisation of power. Strong political freedom, property rights, and decentralisation of power enhance opportunity exploitation (Harper, 1997).

4. The effect of economic development on the institutions-entrepreneurship relationship

These institutional constraints may seem almost trivial to the inhabitants of some developed economies, but they are largely lacking in many less developed countries and are surprisingly limited even in many otherwise developed economies (Fogel, 2006). While the role of EA in facilitating ED has been widely acknowledged, I argue here that ED is also a key condition for further EA to take place. I thus focus on the role of ED in influencing EA amidst the various institutional conditions. The importance of this reverse causality has been suggested by Shane (2009) and among others Reynolds et al. (1994) and Naudé (2011).

4.1 ED and entrepreneurship

“In developed economies, consumer goods industries make superior use of highly specialised capital goods, particularly in machinery, and enjoy access to a wide variety of producer services, such as equipment repair and maintenance, transportation and communication services, engineering and legal supports, accounting, advertising, and financial services and so on” (Ciccone and Matsuyama, 1996, p33). Herein are numerous opportunities for potential entrepreneurs to exploit.

Theorists tend to use the terms growth and development synonymously. Brinkman (1995) explains that while ED involves a process of structural transformation, growth is the replication of more and more of the same structure. ED occurs with sustained growth from a simple, low-income economy to a modern, high-income economy (Myint and Krueger, 2009). Its activities should be geared to creating an economic base (North, 1955). This includes economic activity where a surplus remains after the local consumption of the product, service, or activity has been satisfied. Such a surplus can then contribute to trade with parts of the country or the world. The money from trading activities results in an economic gain, in turn giving rise to ED.

While entrepreneurs and institutions influence the structural transformation of an economy, the very process of structural transformation alters the entrepreneurial opportunities so that EA may be itself endogenous in the ED process (Reynolds et al., 1994; Naudé, 2011). Consequently, the links between ED and EA contain bi-directional causality (Naudé, 2010a); EA affects ED, but ED also affects EA. However, Kirzner (1973) suggests that the initial conditions of ED starts off the relationship between ED and EA. Specifically, Banerjee and Newman (1993) observe that the initial distribution of wealth from ED determines the pattern of occupation choice of potential entrepreneurs. The structure of occupational choice in turn determines how much people save and what risks they bear. These factors then give rise to a new distribution of wealth.

Boettke and Coyne (2003) remind us of the Austrian perspective of entrepreneurship as an omnipresent aspect of human action such that all individuals are entrepreneurs. Thus, they argue that entrepreneurship cannot be the cause of ED. They particularly look to Kirzner's (1973) observation that the entrepreneur responds to opportunities arising from ED rather than creating them or as capturing profit opportunities rather than generating them. In responding to such unexploited profit opportunities, the entrepreneurial process improves on the production process, which in turn contributes to economic growth.

There are several theories of ED to draw from (see Table 3 below). Rostow (1960) suggested overcoming an obstacle of traditionalism by going through five stages of ED: (i) the traditional society (ii) the preconditions for take-off (iii) the take-off (iv) the drive to maturity and (v) the age of high mass-consumption. Essentially, per capita growth cannot exist without turning the economy into a modern economy. Economies undergo a transformation from poor agrarian societies to modern industrial giants. Dependency models (Frank, 1967; Cardoso and Faletto, 1979) view less developed countries as ridden with institutional, political, and economic rigidities, trapped in a dependence relationship with rich countries. Similarly, world-system theory argues that countries are not entirely free, but rather are embedded in a structure of exchange relations that make up the world capitalist system. The political economy of relations shapes countries' possibilities differentially. Advanced economies often dictate the alternatives

available to those less advanced ones at the periphery of global capitalism. The neoclassical counterrevolution introduced market reform perspectives and called for freer markets, privatisation, statist planning, and government regulation of economic activities. Whilst neo-classical economics suggest that competition limits prices, classical economics suggests that supply and demand limits them.

Table 3: Theories of ED in terms of obstacles and suggested solutions

Features	Modernisation	Dependency	World-System	Late Industrialisation	Neoclassical / Market Reform	Comparative Institutional
Obstacle to development	Traditionalism	Neo-colonialism	Peripheral status	Right prices, meagre investment	Wrong prices, state intervention	Institutional disregard
Solution	Staged institution building, and gradual change of values.	Import substitution of not only consumer goods but also intermediate and capital goods.	Radical social & political change at the world-system level.	Price distortions to stimulate economic activity, especially exports.	Swift move towards free markets, protection of property rights.	Contingent match of logics of social organization with opportunities in the global economy.
Agents or actors	Modernising elites foster gradual change in stages	Autonomous state imposes its logic on actors	Internal contra-contradictions trigger change	Developmental state imposes its logic on large industrial enterprises.	Autonomous technocracy imposes its logic on actors	Different actors and relationships allowed and enabled
Expected organisational forms	Large-scale, bureaucratized enterprises. Family enterprises, worker cooperatives, and other traditional enterprises are not viable.	Large, rent-seeking business groups with ties to multinationals and the state, state-owned enterprises, and subsidiaries of multinational enterprises (the 'triple alliance').		Business groups guided by state subsidies and tied to multinationals through arm's length contracts.	Business groups while market failure persists; otherwise, efficient scale enterprises, "serviced" by smaller enterprises.	Social organization and government policy shape relative role and proportions of business groups, small enterprises, and multinationals
Theorists	Rostow (1960), Apter (1965)	Frank (1967), Cardoso and Faletto (1979), Evans (1979)	Wallerstein (1974), Evans (1979)	Wade (1990), Amsden (1989)	Sachs (1993), Leff (1979)	Bendix (1974), Dore (1973), Geertz (1963)

Source: Adapted from Biggart and Guillen (1999) and Guillen (2000)

In Table 3, I find the modernisation perspective (Rostow, 1960) of ED useful to this thesis's attempt to explain EA at a macro-level. Entrepreneurship and competitiveness researchers also support this view of ED (Porter, 1998b; Porter et al., 2002; Acs et al., 2008a). This perspective aligns with observations that potential entrepreneurs recognize opportunities from changes in technology to produce variants of services and inputs to large manufacturing enterprises (Ciccone and Matsuyama, 1996).

The role of technology is important in this modernisation perspective (Porter, 1998b; Porter et al., 2002; Solow, 1957; Romer, 1994). Various technology changes take place when ED transitions from factor-driven to efficiency-driven and ultimately to innovation-driven economies. Factor-driven economies are primarily extractive in nature, while efficiency-driven economies exhibit scale-intensity as a major driver of development. At the innovation-driven stage of ED, economies are characterised by their production of new and unique goods and services created via advanced, and often pioneering, methods. As countries develop economically, they tend to shift from one phase to the next. While Rostow (1960) focused on the age of high mass consumption, Porter's model encompasses recent developments in the economics of knowledge; hence, he focuses on innovation.

In the factor-driven stage, agricultural products and small-scale manufacturing contribute towards the economy. Countries in this stage compete through low cost efficiencies in the production of commodities or low value-added products. Self-employment in agriculture, retailing and craft dominate (Noorderhaven et al., 2004), with sole proprietorships being the dominant form of business registration. These countries neither create knowledge for innovation nor use knowledge for exporting. High levels of necessity type EA prevail. Almost all economies experience this stage, characterised by the very basic of requirements (See Table 4 below).

Table 4 shows that though efficiency enhancers dominate the efficiency-driven stage of ED, basic requirements and innovation factors exist albeit to a lesser extent. Likewise, innovation and sophistication factors dominate the innovation-driven stage. Nevertheless, basic requirements and efficiency enhancers are also

present. Examples of basic requirements include health, primary education, and property rights. Examples of efficiency enhancers include higher education and training. Aspects of innovation and sophistication include the quantity and quality of local suppliers, well-developed production processes, business investment in R&D, high-quality scientific research institutions, collaboration in research between universities and industry, and protection of intellectual property (Lopez-Claros et al., 2007).

Table 4: Weightings at each stage of ED

Weights	Basic requirements	Efficiency enhancers	Innovation and sophistication factors
Factor-driven stage	50%	40%	10%
Efficiency-driven stage	40%	50%	10%
Innovation-driven stage	30%	40%	30%

Source: Lopez-Claros et al (2007)

In the efficiency-driven stage, a shift occurs from an agricultural towards a manufacturing oriented economy. Once industrialization sets in, enhanced scale economies arise while diminishing the scope for EA. To move into this stage, countries must increase their production efficiency and educate the workforce to be able to adapt in the subsequent technological development phase. Varying education levels results in varying levels of managerial ability. As an economy becomes wealthier, the average enterprise size should increase as better managers run the companies (Schultz, 1980).

The innovation-driven stage marks an increase in knowledge-intensive activities (Romer 1990). In the innovation-driven stage, knowledge provides the key input. In this stage, the focus shifts from enterprises to individuals in possession of new knowledge (Acs et al 2009). The individual decides to start an enterprise based on expected net returns from a new product. The innovation-driven stage favours high value-added industries in which EA is important.

Innovation-driven economies move from manufacturing towards services, offering an increase in opportunities for small-scale production (Inman, 1989). This increase in EA arises from lower economies of scale and general barriers to entry in services compared to manufacturing. In some sectors, small businesses are more capable than large ones of occupying upcoming market niches (Jovanovic and Gilbert, 1993). Technological changes, with improvements in information technologies, such as telecommunications, have increased returns to EA. Mobile phones services, personal computers, the internet, web services, express mail services and photocopying services make it less expensive and less time consuming for geographically separate individuals to exchange information. In order for economies to move into the innovation-driven stage, they find it necessary to develop institutional conditions conducive to EA. Several countries have achieved this in the past decade, including Korea, Ireland, Israel and Taiwan to name some (Acs and Szerb, 2007).

Recently Acs and Szerb (2009) showed that the innovation-driven economies break into three separate clusters. The most entrepreneurial country group, the 'leaders', is followed by 'innovation followers'. Innovation challengers' refer to another group of innovation-driven countries with relative advantages in challenging the leaders'. 'Innovation followers' and 'innovation challengers' still exhibit characteristics of the efficiency driven economies. Table 5 shows examples of countries at the various stages of ED as countries modernise.

Table 5: Countries at respective stages of ED

Factor-driven	Efficiency-transformers	Innovation-challengers	Innovation-followers	Innovation-leaders
Algeria	Herzegovina	Chile	Austria	Australia
Argentina	China	Hong Kong	Belgium	Canada
Bolivia	Croatia	Italy	Czech Republic	Denmark
Brazil	Egypt	Latvia	France	Finland
Colombia	Greece	Malaysia	Germany,	Iceland
Dominican Republic	Hungary	Portugal	Israel	Ireland
Ecuador	India	Puerto Rico	Japan	Netherlands
Guatemala	Indonesia	Saudi Arabia	Korea	New Zealand
Iran	Jamaica	Spain	Singapore	Norway
Jordan	Macedonia	United Arab Emirates	Slovenia	Sweden
Kazakhstan	Morocco			Switzerland
Mexico	Poland			United Kingdom
Panama	Romania			United States
Peru	Russia			
Philippines	South Africa			
Serbia	Thailand			
Syria	Tunisia			
Turkey	Uganda			
Uruguay				
Venezuela				

Source: Acs and Szerb (2009)

While the abovementioned technological changes result in an increasing number of opportunities for entrepreneurs to exploit, a recent theory not shown in Table 3 - endogenous growth theory (Aghion and Howitt, 1992; Romer, 1994) – also argues for the institutional perspective to be accounted for in any theory of ED.

This theory views as endogenous the technological changes viewed by Solow (1957) as exogenous. Economic results primarily from endogenous and not external forces. It holds that investment in HC, innovation and knowledge are significant contributors to economic growth. It suggests that the positive externalities and spillover effects of a knowledge-based economy will lead to ED. The implications are that formal institutional incentives can have an impact on the long-run growth rate of an economy and thus on even more opportunities for EA. For instance, subsidies for R&D and education can increase the growth rate by increasing the incentive for innovation.

4.2 ED and the source of entrepreneurial opportunity

A common theme associates ED to changes in technology. Earlier, Section 2.3 noted that changes in technology are an important source of opportunity (Shane, 2003). Often ED introduces with it changes in technology that in turn sets off opportunities² for EA.

Ciccone and Matsuyama (1996) make a particular observation on how ED results in opportunities. For instance, an initial investment in a modern factory that produces 'final goods' will set-off opportunities in a number of intermediate goods and services (Gries and Naude, 2009a). Intermediate goods include activities such as services, maintenance work, craft and trade, transport and logistics, commerce activities, and engineering.

Potential entrepreneurs start small enterprises, which then supply intermediate goods to this modern factory (Gries and Naude, 2009a). Producing new intermediate goods induces final good producers to demand more of these. This demand in turn improves the incentives for other potential entrepreneurs to start-up enterprises. With entrepreneurs spotting opportunities for providing final-goods manufacturing enterprises in the modern sector with inputs, including services, the overall incidence of outsourcing in an economy increases (Gries and Naude, 2009b). Consequently, this raises the share of the services sector in

² Though I focus on opportunities related to ED, I acknowledge that the level of ED also influences the availability of financial resources for business start-ups.

employment and output. Changes in final consumer demand, in favour of more service and service-intensive goods as income rises, result in more opportunities in the modern sector for providing service inputs.

From a long-run development point of view, these start-ups contribute to modern structural economic change by increasing the specialization of manufacturing enterprises by allowing them to outsource intermediate input supply (Gries and Naude, 2009b). Consequently, in countries that are able to adequately increase the entrepreneurial ability of their citizens and apply fewer constraints on start-ups, there should be more opportunity-driven start-ups and more specialized manufacturing enterprises.

4.3 ED and the spread of entrepreneurial opportunity

An important mechanism to increase EA includes the spread of entrepreneurial opportunity. Entrepreneurial opportunities can spread through imitation (Schmitz, 1989). They also spread through clustering (Porter, 1998a), entrepreneurship capital (Audretsch and Keilbach, 2004), and the spillover of knowledge (Acs et al., 2009a) (see Table 6). Taking from the analyses of Baumol (1988), Schmitz (1989) argues that imitative type entrepreneurial processes accompany ED suggesting that the innovative type entrepreneurial processes proposed by a Schumpeterian model are not solely responsible. These processes involve individuals imitating the existing stock of industry knowledge and implementing this knowledge to produce a service or product. Entrepreneurs can augment the existing stock of knowledge in a learning-by-doing fashion. Technology diffuses through this act of imitation and implementation.

Table 6: Entrepreneurship theories linked to ED

Theory	Description	Source
Imitation	Learning from the ideas of existing entrepreneurs	Schmitz (1989)
Industry clusters	Enterprise formation or existing enterprise innovation through learning from the ideas and R&D efforts of entrepreneurs and large enterprises within a cluster of existing buyers and seller in a particular region.	Porter (1998a)
Entrepreneurship Capital	A regions endowment with factors conducive to the creation of new businesses	Audretsch and Keilbach, (2004)
Knowledge Spillover	Knowledge spillovers from incumbent organisations have a positive effect on entrepreneurship. However, a nation's institutions may impose a gap between knowledge and economic knowledge yielding a lower volume of spillovers.	Acs et al (2009a)

Source: Adapted from Acs (2010)

Technology also diffuses when enterprises participate in a cluster (Porter, 1998a). Clusters are geographical concentrations of interconnected companies and institutions like universities and trade associations in a particular field. A company participating in a cluster easily sources inputs, access information, technology and institutions and to co-ordinate with other companies. Clusters bring the benefits of external economies (Marshall, 1938). External economies depend on the general progress of the industrial environment. The growth of related branches in the supply chain, in the same locality, which supply highly specialised intermediate goods is an important source of external effects.

Audretsch and Keilbach (2004) use the concept of entrepreneurship capital to link entrepreneurship to ED. They define entrepreneurship capital as a region's endowment with factors conducive to the creation of new enterprises. Entrepreneurship capital involves a high endowment of potential entrepreneurs willing to take the risk of starting a new enterprise. High entrepreneurship capital manifests in a high propensity for individuals to start new enterprises. It also implies the existence of formal and informal networks and a general social acceptance of EA (see the concept of SC described later in Section 4.3.1. It

implies the activity of bankers and venture capitalists willing to share the risks and benefits involved: the concept of FC described later in Section 4.3.4.

Acs et al (2009a) argue that EA does not involve simply the arbitrage of opportunities, but also the exploitation of knowledge spillovers not appropriated by existing enterprises. These spillovers as operate more strongly in high technology clusters of the type described by Porter (1998a). For example, individuals with knowledge and experience gained in R&D laboratories of previous employers start enterprises if the costs of starting the enterprises are sufficiently low. Associated with these knowledge spillovers then are employees with high levels of HC. Existing small enterprises can also start new enterprises if they decide to exploit the knowledge spillover from R&D activities of major enterprises.

4.4 The institutional link to ED and EA

Institutional theory helps to answer why there are cross-country variations in EA. Hall and Sobel (2008, p89) argue, "Entrepreneurship is the mechanism through which institutions are translated into economic growth." Wennekers and Thurik (1999) developed a framework (see Figure 4 below) linking institutions, economic growth and EA. Though I am not interested in tracing the relationship from EA to economic growth, their delineation of macro-level elements of EA is worth noting. Macro-level variety, competition, selection and imitation contribute the crucial elements of entrepreneurship that relate to economic growth. Moreover, key mechanisms in which entrepreneurial opportunities diffuse through society include variety, competition, selection and imitation. Variety arises from the diversity of individuals and their entrepreneurial actions. Amidst this variety, competition and selection enable a country's entrepreneurs to learn from their own and other's successes and failures. These learning processes enable entrepreneurs to increase their skills and adapt their attitudes (Wennekers and Thurik, 1999). The outcome of such spillovers influences a citizen's occupational choice.

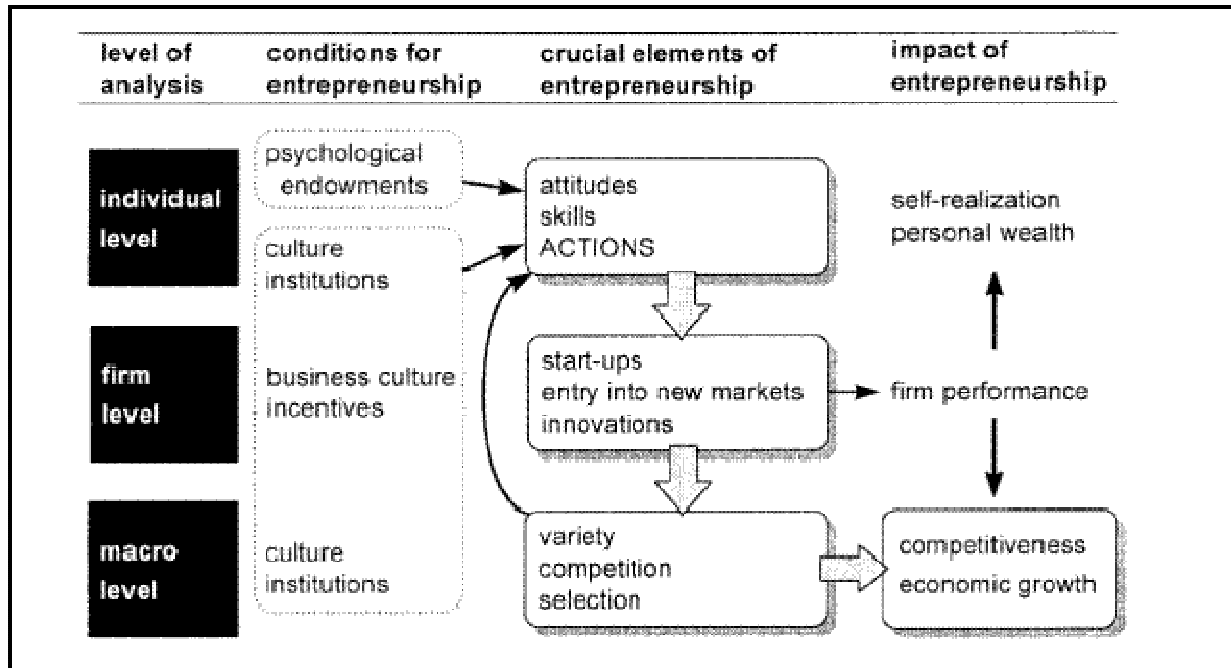


Figure 4: Linking entrepreneurship to ED and institutions

Source: Wennekers and Thurik, (1999)

Entrepreneurship is an omnipresent aspect of human action (Boetkke and Coyne, 2003). As such, it cannot also be the cause of ED. Rather, for ED to take place certain institutions must be present for EA to flourish. ED arises from the adoption of certain institutions, which channel and encourage EA in a direction that spurs economic growth. Among those countries where opportunities are left unexploited, one finds either a lack of institutions or an institutional structure that discourages opportunity-driven EA. Likewise, in those developed countries where individuals exploit opportunities for mutual gain, one expects an institutional environment that encourages opportunity-driven EA.

The institutional approach to ED is contingent in nature. No single best path, process, pattern of development or social organisation exists. Rather institutional patterns of social organisation enable countries to take different approaches to ED (Rodrik, 2008). Chapter 3 I argued that the transitions from factor to efficiency and eventually to an innovation-driven stage of ED increases the quantity and diversifies the nature of opportunity-driven EA. Ciccone and Matsuyama (1996) and Naude (2010) have suggested that the accompanying technological advance with ED leads to a variety of opportunities in the supply chain. These include

opportunities in services, commerce, engineering, maintenance work, craft and trade, and transport and logistics. However, the interplay between informal and formal institutions influences the actual exploitation of these opportunities (Boettke and Coyne, 2003). Prospering economies contain a context where the institutional interplay supports entrepreneurial ability and provides fewer constraints to exploit opportunities (Gries and Naude, 2009b).

Formal institutions have a dynamic effect on entrepreneurs attempting to exploit the opportunities arising out of ED (Welter, 2011; Klapper et al., 2009). This might occur because formal institutions change more easily than informal institutions (Williamson, 2000). Changes in technology, political forces, and regulation influence the existence and occurrence of new opportunities (Shane, 2003). For example, the initial reforms in Central and Eastern European countries that allowed private enterprises to exist demonstrate the changes in regulations that can create new opportunity fields for entrepreneurs (Smallbone and Welter, 2009). Nevertheless, the effect of formal institutions on EA will not be positive if informal institutions are also not supportive of EA. These informal incentives embodied in customs, traditions, and codes of conduct are more resistant to formal policies and tend to change slowly over time (North, 1990; Jutting et al, 2007).

Regard to informal institutions is necessary since human co-operation and related human co-ordination problems are central to the theory. Human co-operation and co-ordination problems in exploiting the opportunities arising out of ED are likely to be traced to societal problems and related informal institutions. Two factors affect human cooperation viz. the completeness of the information received and the way that the individual processes such information (North, 1990). For example, potential entrepreneurs formulate subjectively derived mental models of starting an enterprise. Human interaction relies on regular and expected patterns of behaviour. Institutions facilitate interaction, provide incentives, and reduce the coordination costs of undertaking EA by making actions more predictable.

Formal institutions are rooted in longstanding informal institutions (Williamson, 2009). For example, certain societies with a high divide between rich and poor

have a poor image of EA as a means of wealth creation. Sociologists (Biggart and Guillén, 1999) tend to regard informal institutions as the missing link in ED theory. They criticise market models that do not account for the conventions that govern social interaction in economic settings. They argue that even Schumpeter (1936) identified how social customs relate to ED. Schumpeter argued that economic activity occurs in repeating cycles and, over time, economic routines become custom. The entrepreneur steps outside of economic custom to establish new economic practices.

Sociology based perspectives, through some alignment, can usefully support an explanation based on North's (1990) formal and informal institutional framework. For instance, according to DiMaggio and Powell (1983), formal institutions drive the coercive isomorphism process. Informal institutions drive mimetic and normative isomorphism. According to Welter (2005), North's (1990) informal institutions reflect normative and cultural-cognitive elements of institutions (Scott, 1995).

Generally, institutions operate to lower transaction costs by clarifying the rules and reducing uncertainty. Ideally, this occurs when formal and informal institutions are mutually supportive. This reduction in uncertainty leads to some entrepreneurs gaining more confidence to start enterprises. Others capitalise on the uncertainty. For example, if changes in formal rules are in harmony with the prevailing norms and values, the interaction of their incentives will tend to reduce transaction costs (Sobel and Coyne, 2011) and clear up resources for EA among those members of the community that are less wealthy. When new formal rules conflict with the prevailing cultural norms and values, the interaction of their incentives will tend to raise transaction costs and reduce EA within the community (Pejovich, 1998). However, more wealthy and less risk-averse members of the community might perceive this as an opportunity.

This increase in transaction costs occurs because more resources are required to overcome the uncertainty from a lack of trust. Transaction costs are the costs of all resources required to transfer property rights from one economic agent to another. They include the cost of making an exchange i.e., discovering exchange opportunities, negotiating exchange, monitoring exchanges, and enforcing

agreements and the cost of maintaining and protecting the institutional structure i.e., the judiciary, police, and armed forces (Pejovich, 1998).

Whilst North (1994) argues that adaptive institutions that are able to evolve over time are more likely to lead to speedier ED than institutions that are inflexible, Biggart and Guillén (1999) argue that high levels of ED could be still present among some countries that capitalise on their longstanding strengths. These tend to be informal in nature and result out of social organisation in collective understandings and cultural practice rooted in a country's historical development. For example, some societies find it normal to raise finance through family ties. Yet, others view this as inappropriate. These other societies consider fostering ties to banks or to foreign investors as a more legitimate fundraising strategy.

4.5 Summary

Formal institutions have a dynamic effect on entrepreneurs attempting to exploit the opportunities arising out of ED (Welter, 2011; Klapper et al., 2009). This might occur because formal institutions change more easily than informal institutions (Williamson, 2000). Changes in technology, political forces, and regulation influence the existence and occurrence of new opportunities (Shane, 2003). While political forces and regulations represent institutions, we have noted that changes in technology associate with the changes in economic structure that underlies ED.

While I have argued earlier that formal institutions will not affect EA positively if informal institutions do not support EA, this argument is in complete without a consideration of the role of ED. ED provides opportunities. Even when institutions support EA, it might not increase steeply if little opportunities exist for entrepreneurs to exploit. Like changes in culture, it also takes considerable time to alter a country's level of ED (Acs and Szerb, 2009).

I have found the modernisation perspective (Rostow, 1960) of ED useful to this thesis's attempt to explain EA at a macro-level. The role of technology is important in this modernisation perspective (Porter, 1998b; Porter et al., 2002; Solow, 1957; Romer, 1994). Various technology changes take place when ED transitions from factor-driven to efficiency-driven and ultimately to innovation-

driven economies. This modernisation or technological change perspective also aligns with observations that potential entrepreneurs recognize opportunities from changes in technology to produce variants of services and inputs to large manufacturing enterprises (Ciccone and Matsuyama, 1996).

For instance, an initial investment in a modern factory might set-off opportunities in a number of intermediate goods and services including maintenance work, craft and trade, transport and logistics, commerce activities, and engineering (Ciccone and Matsuyama, 1996). Potential entrepreneurs start small enterprises, which then supply intermediate goods to this modern factory (Gries and Naude, 2009a). One can gauge the importance of institutions in ED if one understands their connection to changes in economic structure due to technological change (Nelson, 2008). In this light, Porter's ED stages model becomes appropriate in any analysis including ED, institutions and EA.

With such a variety and magnitude of opportunities available because of ED, it may appear odd that potential entrepreneurs might still not choose to exploit them. We gain clarity on the dynamics underlying the exploitation of opportunities at a country level when examining the institutional context of a country's opportunity environment. Institutions or the 'rules of the game' tend to moderate the exploitation of opportunities arising out of traversing the stages of ED.

An examination of the role of institutions has to look into not just the availability of opportunities themselves, but also the spread of opportunities. We have seen that the spread of opportunity hints at social processes, human capital, and financial access (Acs et al, 2009a; Audretsch and Keilbach, 2004).

5. Conceptual framework

This Chapter builds on the literature reviewed in Chapters 2 to 4 to develop a framework to explain the variations in cross-country EA. I focus on explaining EA of an opportunity nature as opposed to those started out of necessity. Entrepreneurs that are motivated by an opportunity to grow their business also tend to register their enterprises (Levie and Autio, 2011). The framework outlined here relies on institutional and ED theories and uses a configurational approach to model the effect of contextual interdependencies on EA.

Formal institutions adapt easily to shifts in political and economic policy. On the other hand, culturally-based informal institutions do not adapt easily (Li and Zahra, 2012). Similarly, it takes a time to progress to higher stages of ED (Acs and Szerb, 2009). Thus, the variations in cross-country EA can be ascribed largely to the different levels of formal institutional development. Further variations arise from the surrounding informal institutions and the nature of economic activity as well as their interaction with the incentives of formal institutions.

Implicit here is an interaction between formal institutions, informal institutions, and ED, which in turn affects cross-country EA. Thus, I propose a three-way interaction. Consequently, this Chapter develops hypotheses on the nature of the three-way interactions between formal and informal institutions, and ED. The Chapter begins with a review of the configurational approach, which suggests ways to conduct a three-way interaction (Wiklund and Shepherd, 2005).

5.1 The configurational approach

Configurational theory enables one to model those economic circumstances that lead to the same outcome from different initial conditions and through different paths (Doty et al., 1993). These paths allow for many possible 'ideal types' (Doty and Glick, 1994). Some of these 'ideal types' include substitutes or complements (Black and Boal, 1994). Therefore, different causal processes might yield similar outcomes.

The nature of configurations is inherently discontinuous, making them suitable to examine non-linear phenomena that exhibit punctuated equilibria. As such, these properties accommodate the reality of the contextual differences that underlie the non-linearity within the S-shaped ED-EA relationship (see Chapter 3).

Empirically, researchers represent a configuration by the simultaneous interaction of three variables (Baker and Cullen, 1993; Dess et al. 1997; Miller, 1988). Consequently, the configurational approach examines the significance and subsequent nature of a three-way interaction term within a multiple regression model. One can explain such an interaction substantively by selecting a theoretically meaningful focal or main explanatory variable. One then chooses a first-order moderator similar to the way one chooses a contingency variable for a two-way interaction. Extending this into a configurational approach, one goes further to include a second order moderator (Jaccard et al., 2003), which serves as contingency variable for the first-order moderator.

Formal institutions serve as the focal explanatory variable in this conceptual framework. In the following discussion, I find theoretical support for informal institutions as a primary moderator of the formal institutions-EA relationship and consequently for ED to serve as a secondary moderator. However, some support exists for ED to serve as a primary moderator. Theorists (Kam and Franzese, 2003) using this approach have tended to start with a main effects hypothesis predicting the relationship between the focal explanatory variable and the dependent variable, building their argument hierarchically to a two-way interaction hypothesis and finally to a three-way interaction hypothesis.

Researchers implement configurational approaches through regressions. Though one includes the direct effect and other control terms, the research only examines the nature of the higher order interaction (Cohen and Cohen, 2003; Brambor et al., 2006). Researchers examine for the significance of the coefficient of the three-way interaction term. Researchers also compute the statistical significance of difference in fit between the model with and without the three-way interaction terms. Accordingly, researchers use the regression test statistic to examine for meaningful improvements in model fit in a hierarchical regression and not for the fit of particular models (Brambor et al., 2006).

Researchers enter main effects into a multiple regression model not to test them but to remove them from the product term (Brambor et al., 2006). The cross product carries information of both the main and interaction effects (Cohen and Cohen, 2003). No requirement exists for the main effects estimates to be significant (Bedeian and Mossholder, 1994).

5.2 Hypotheses

“A nation’s complex tapestry of formal and informal institutions together forms the basis of its economic and social system and, being very rarely the same, is one of the causes for differences between countries” (Salimath and Cullen, 2010, p.365). For instance, this institutional context influences the EA within its borders (De Clercq et al, 2010; Baker et al, 2005; Wennekers and Thurik, 1999). They do this by imposing “direct and indirect effects on both the supply and demand of entrepreneurs” (Acs et al, 2008a, p219). Thus, while prevailing cultural values (Spencer and Gomez, 2004) might affect the supply of entrepreneurs, regulatory support (Bowen and De Clercq, 2008) might affect the demand for entrepreneurs.

This thesis suggests that EA varies across countries because of their different levels of formal institutional development. Even if levels of formal institutional development were the same, potential entrepreneurs might respond differently to its incentives because of different levels of informal institutional development. In other words, informal institutions moderate the effect of formal institutions on EA. In turn, the effect of informal institutions on the formal institution-EA relationship will also differ – this time depending on the ED context. In particular, the rates of increase in EA differ according to the different levels of ED, similar to the S-shaped changes in EA identified by Acs and Szerb (2009).

5.2.1 Formal institutions

Formal institutions comprise of statutes, constitutions, common law, and other governmental regulations. They determine the governance structure, individual and property rights, contracts, and the enforcement system. Legislators, judges, bureaucrats, and other rule-makers enact, change and enforce them (North, 1990). The model depicted in Figure 8, (see Section 4.3) highlights the linkages between formal institutions and conditions for EA like FC, O&I and explicit HC.

Economic institutions tend to be of a high level when they secure individual rights and promote individual actions in a market exchange process. For instance, North (1981) argued that higher-level institutions would simultaneously support private contracts and provide checks against expropriation by the government or other politically powerful groups. Likewise, Acemoglu et al (2001) argued that formal institutions of private property contribute towards a cluster of high-level economic institutions, including the rule of law and the enforcement of property rights. Those that have adopted these two institutions as well as others that stem from it – freedom of choice, predictable government activity, rules conducive to market and firm development, freedom of contract and exchange, etc. – have also grown at a faster rate as compared to their counterparts which have adopted different institutions (Boettke and Coyne, 2003). Accordingly, to facilitate an analysis of the effects of institutions in a cross-country setting, I frame countries with “higher” levels of formal institutional development as those that secure property rights and the rule of law. A majority of the other institutions that correlate with economic growth are grounded in these two institutions. Societies with formal institutions that facilitate and encourage factor accumulation, innovation and the efficient allocation of resources will prosper (Acemoglu and Johnson, 2005).

A high level of formal institutional development facilitates innovative behaviour through easing the surrounding uncertainty (Boettke and Coyne, 2003). As suggested in the preceding paragraphs, property rights and the rule of law comprise core formal institutions. In particular, formal institutions that manifest in effective regulations are required to advance market-based relationships. They achieve this by facilitating exchanges between otherwise weakly connected market participants. Of value then is the efficiency and predictability of the tax collection system (Estrin and Prevezer, 2010), the ability to obtain required permits and licenses (Djankov and Murrell, 2002) as well as the presence of government policies aimed at promoting EA (Reynolds et al., 2005). Depending on how these institutional conditions influence the distribution of profits between entrepreneurs and employees, potential entrepreneurs might decide to be either entrepreneurs or employees (Jovanovic and Gilbert, 1993).

Formal institutions that manifest in inefficient government regulation deter EA (Gnyawali and Fogel, 1994). For example, weak legal protection hinders the starting of new businesses (Johnson et al., 2002). Numerous procedures, lengthy time and high costs of starting a business deter EA (Djankov et al., 2002). Arduous labour regulations also deter EA in labour-intensive industries (Klapper et al., 2006). An oft-cited example is how the prevalence of inadequate formal institutions led to low levels of EA in Russia (Aidis et al., 2008). In the popular literature, De Soto (2000), narrates the lack of a formal, integrated property rights system among less developed countries. He argues that EA suffers because individuals are unable to leverage their informally owned assets for credit.

Klapper et al (2006) tested the effect of regulations on a sample of over three million firms in 21 countries: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Romania, Spain, Sweden, and the United Kingdom. They focused on both country and industry characteristics. Country characteristics include the cost of fulfilling the bureaucratic requirements to register a company. They also focus on whether the industry has “naturally high entry.” They find that entry regulations hamper entry, especially in industries that naturally should have high entry. Entrants are larger—suggesting that small firms are dissuaded from entering or have to grow without the protection of limited liability until they can afford the costs of incorporation.

Higher levels of formal institutions often manifest in the protection of private property rights (Acemoglu and Johnson, 2005). They will tend to provide incentives to potential entrepreneurs and thus increase EA. For example, they may protect entrepreneurs against wrongful expropriation of assets by third parties or corrupt behaviour by government officials (Baumol, 1990; Bowen and De Clercq, 2008). Governments provide this protection through institutions such as the police, the courts, and the law.

Where institutions increase the certainty that contracts will be honoured and property protected, potential entrepreneurs will be more willing to provide specialized products and services, invest in sunk assets, and undertake complex transactions (North, 1990). Potential entrepreneurs will thus accept an expanded

government role, levies, and taxes to cover policing expenses, and state monopoly over the use of force by demilitarising private armies (Bates, 2001).

In addition, formal institutions that influence the availability of financial resources through policies that increase access to bank credit, the creation of investment companies, credit with low interest rates and credit guarantee schemes will tend to increase EA (van Gelderen et al., 2006).

In the main, EA requires market-based mechanisms. Lower levels of formal institutions will reduce the viability of market-based relationships and have a negative effect on EA (Bruton et al, 2005; De Clercq et al., 2010). On the other hand, higher levels of formal institutions that manifest in effective regulations that facilitate exchanges between otherwise weakly connected market participants will increase EA. All in all then, I advance the following hypothesis:

H1: The higher the level of formal institutional development, the higher the level of EA

5.2.2 The interactive effect of informal institutions

Informal institutions comprise customs, moral values, religious beliefs, and other norms of behaviour that have stood the test of time (North, 1990). Among others, Boettke et al (2008b) have made the point that formal institutional development works best when backed by existing informal institutions. Accordingly, higher levels of informal institutional development ought to support the ideals of private property protection and a strong rule of law. They protect the individual and his or her property and promote individual freedom of choice. They thus include a culture that tends to value the maintenance of individual liberties and cultivates risk-taking attitudes (Pejovich, 1998). According to Williamson and Mathers (2011) and Tabellini (2010), the three main informal attributes that encourage and support property rights and the rule of law required for market activity are trust, respect, and individual self-determination. Tabellini (2010) tested this through a factor analysis and found that trust, respect, and individual self-determination form a principal component of positive beliefs.

According to the framework depicted in Figure 8 (see Section 4.3) informal institutions correspond to conditions for EA, such as structural, relational, and cognitive SC as well as higher levels of tacit HC. While structural SC conditions manifest in social ties and networks (Arenius and De Clercq, 2005; Anderson et al, 1994), relational SC conditions manifest in trust (Knack and Keefer, 1997). On the other hand, cognitive SC and tacit HC conditions relate to a particular cultural context, for example the culture of risk taking and individualism (Thomas and Mueller, 2000). As suggested in Section 4.3, the development of tacit human capital through years of work experience might enhance one's expertise and thus the confidence to take risks in starting a business related to the respective area of expertise.

The various dimensions of SC are not mutually exclusive but interconnected. Without physical centrality or networks (structural SC), entrepreneurs would be less likely to develop trustful relationships³ (relational SC), subsequently hampering the formation of a culture of shared beliefs (cognitive SC). Alternatively, an entrepreneurial network with shared beliefs will more likely develop trusting relationships among the entrepreneurs and between the entrepreneurs and other stakeholders in the network (Liao and Welsch, 2003).

5.2.2.1 Social networks

Higher levels of social networking will tend to enhance the formal institutions-EA relationship. Networks sometimes contain potentially complementary but disparate private knowledge (Choi & Shepherd, 2004). When entrepreneurs participate in such networks, they are more likely to identify opportunities associated with such knowledge. Even the exploitation of weak ties between individuals who live close to each other increases opportunities for starting a business (Arenius and De Clercq, 2005). Moreover, entrepreneurs use their social networks to identify available resources when they perceive formal institutions as incentives. This enables them to go on to find new and better ways

³ On the other hand, some like Woolcock (1998) argue that trust is more a consequence of SC rather than SC itself

to combine these resources with their own resources and knowledge (Arenius & De Clercq, 2005).

Individuals use informal networking behaviour through associational activity within contexts where policies and regulations do not provide incentives for EA. These informal networks tend to substitute for such weak formal institutions to facilitate business transactions and economic activity (Danis et al, 2010; Luo, 2003). In these associations, entrepreneurs establish relations with individuals from a variety of backgrounds and professions, both within and outside their own communities (De Clercq et al, 2010; Danis et al, 2010; Knack & Keefer, 1997). Entrepreneurs obtain financial and market information through their networks established within trade associations, political parties, religious groups, or professional associations (Acs & Stough, 2008; Davidsson & Honig, 2003). They increase their exposure to those who may be more knowledgeable about setting up a business or provide resources to facilitate the process (Putnam, 1994).

While formal institutional reforms play a significant role in distributing opportunities for EA (Lundström and Stevenson, 2005; Hoffmann, 2007), informal institutions are still necessary to influence perceptions of these opportunities (Welter and Smallbone, 2003). In an ambiguous O&I context, potential entrepreneurs will base their decisions on social cues with participation in social networks regarded as crucial (Aldrich, 1999; Kwon and Arenius, 2010). Consequently, a higher level of social networking will tend to result in a stronger positive relationship between the level of formal institutional development and the level of EA.

5.2.2.2 Trust

Though important, an entrepreneur's social network does not guarantee the appropriation of the resources necessary for venture growth. For social networks to be effective in appropriating resources, a high degree of trust must also be present between the entrepreneur and his contacts (Liao and Welsch, 2005).

While at face value one expects increasing trust to be in harmony with collectivist societies, their hierarchical nature (Tabellini, 2010) and close relationships restricted to within-group associations actually limits trust (Olson, 1982). The trust

referred to in this thesis includes generalised trust or trust in strangers. This type of trust harmonises with the market processes prevalent in individualistically oriented societies (Williamson, 2011). It enhances the trust that underlies relational SC and the structural SC that supports the same relational SC. Conceptually, this type of trust benefits a country's economic performance.

Formal institutions are likely to increase EA when the level of trust increases (Knowles, 2006; Durlauf and Fafchamps, 2005). High levels of trust reduce the uncertainty surrounding relationships among entrepreneurs and their customers as well as between entrepreneurs and their resource providers and thus also reduces the transaction costs involved in related resource exchanges (Kwon and Arenius, 2010; Aidis et al., 2008; McMullen et al., 2008). Individuals are then less likely to fear that others will misuse their personal resources for their own personal benefit, which in turn increases their propensity to exploit their resources to create a new business.

In countries with low levels of trust, people will transact more with close friends and relatives than with strangers, as in collectivist societies. Ethnic, political, religious, or income differences often polarise such societies. For instance, associations often form along ethnic lines in such societies. Though this might strengthen trust and cooperation within an ethnic group, it weakens trust and cooperation between this and other groups. In those instances of a positive correlation, reverse causality might be at play. This occurs when high-trust individuals join formal associations in which the initial transactions involve interacting with strangers (Knack and Keefer, 1997).

One therefore expects people's individual resources to be more instrumental for EA among countries with high levels of trusts than their counterparts in low-trust countries (De Clercq et al., 2011b). Fukuyama (1995) classifies the U.S., Japan and Germany as high-trust societies, and France, Italy, China, Korea, Hong Kong and Taiwan as low-trust societies. Moreover, strong informal institutions that manifest in trust support formal institutions like property rights. They do this by reducing transactions costs and thus furthering market exchange (Fukuyama, 1996; La Porta et al., 1997; Dixit 2004; Francois and Zabojnik, 2005). The more a person trusts his fellow citizens, the less he expropriates their property and vice

versa (Kerekes and Williamson, 2008). Consequently, a higher the level of trust will tend to result in a stronger positive relationship between the level of formal institutional development and the level of EA.

5.2.2.3 Culture

Culture has been described in terms of uncertainty avoidance, hierarchy, conservatism and, individualist or collectivist orientations. In general, risk-prone, conservative, hierarchical or collectivist societies demonstrate lower formal EA. Generally, a culture that supports EA will amplify the impact on the efficacy of formal policies to stimulate EA (Meek, 2009). The same formal institutions that have a positive impact on EA often associate with a notion of freedom, a rule of law which is certain and equally applicable to all, freedom of choice, and the ability to freely contract with others (Olson, 1996).

Cultures that support individualism and risk taking tend to increase EA (Shane, 1992, 1993). Individualistic cultures value people for their achievements, status and other unique characteristics. In collectivist cultures, social groups such as the family, social class, and organization all take precedence over the individual. Such societies do not wish to put the family at risk and thus have risk-averse tendencies (Shane, 1995). Similarly, extant research associates risk taking and risk seeking behaviour to EA (Hisrich et al., 2005). In a collectivist society, the entrepreneurial role depends largely on social networks and personal contacts with key individuals who, for example might provide a loan to a start-up. In these societies, citizens with high needs for affiliation are more likely to develop the support network that will be useful to start a business. In contrast, in less intimate, individualist societies, following the rules and procedures of a financial institution, for example, may be the key to garnering support for the start-up thus attenuating the need for affiliation (Baum et al., 1993; Erez and Earley, 1993).

More hierarchical cultures tend to restrain free exchanges of resources and therefore may offer fewer chances for people to leverage their personal resource base with external resources that they might be lacking (Scholtens and Dam, 2007), lessening their chance of increasing EA. In contrast, with low levels of hierarchy, incumbents may be less inclined to defend the current status quo and

protect their privileges, which make it easier for entrepreneurs to leverage their personal resources in support of their new business endeavours (Mitchell et al, 2000).

Collectivist cultures tend to be conservative. Highly conservative cultures promote relatedness and communal relationships and encourage people to achieve “in-group” goals rather than reach out to those outside the in-group, even if those others could help them achieve their personal goals (Kim et al, 1996). Consequently, in such cultures, entrepreneurs will have reduced opportunities to leverage their skills and contacts with knowledgeable others (Matsumoto et al., 2008; Mitchell et al., 2000). In contrast, in less conservative cultures, society admires autonomy and individual achievement than commonly shared beliefs with the in-group, entrepreneurs will tend to have increased opportunities to start businesses (Begley and Tan, 2001).

According to the preceding discussion, higher levels of social networks, trust, and a culture of risk-taking and individualistic behaviour will tend to increase EA. Moreover, one expects such higher levels of informal institutional development to complement any positive impact that existing formal institutions have on EA. This theory suggests that informal institutional development has a positive moderating effect on the formal institutions-EA relationship. Therefore,

H2: The higher the level of informal institutional development, the greater the positive relationship between the level of formal institutional development and the level of EA

5.2.3 The interactive effect of ED

Aside from the institutional influence on EA, a country’s economic structure also plays a role in influencing its particular level of EA (Acs and Szerb, 2009). This can be seen from the different predominant economic activities, which historically evolve from the primary activity of agriculture, onto industrialisation and a knowledge-based society (Wennekers et al. 2005). Higher formal institutional development is particularly important at lower levels of ED (Haggard et al, 2008). One thus expects the interactive effect of ED to reduce the positive impact of formal institutions on EA as ED increases.

Improvements in formal institutions have a greater impact on EA at the factor-driven and efficiency driven stages of ED (Acs and Szerb, 2009; Porter et al, 2002). In such low ED contexts, entrepreneurial opportunities increase sharply since the supply chain extends from a low base of agricultural type opportunities to include both manufacturing and service opportunities. Manufacturers who focus on their core business stimulate service opportunities by outsourcing specialist services (Ciccone and Matsuyama, 1996). An increase in transaction complexity accompanies these changes in economic structure accompany (Acs et al., 2008a; Acs and Virgill, 2010).Correspondingly higher levels of formal institutional development allow for such complex transactions. For instance, formal institutions protect the intellectual property related to the higher levels of innovation present here. In turn, the higher levels of formal institutions provide incentives to individuals to exploit the increased number of opportunities leading to a sharp increase in EA. Thus, as the structural changes from ED introduce more opportunities for EA, debottlenecking formal institutions has a significant impact on exploiting entrepreneurial opportunities at low ED levels.

Rodrik et al (2004) show how reforms in formal institutions among less developed Eastern European economies gave rise to increased investments and increased opportunities for potential entrepreneurs. As a result, former less developed countries like Latvia, the Czech Republic, and Slovenia now enjoy higher levels of ED extending as far as the innovation-driven stage (Acs and Szerb, 2009). Importantly, recent research shows an S-shaped relationship between ED and EA where increases in EA are high at lower levels of ED particularly in the transition between the factor and efficiency-driven stage as well as in that between the efficiency and innovation-driven stages of ED (Acs and Szerb, 2009).

On the other hand, at higher levels of ED, high-quality economic, political, and legal institutions are prevalent (Sobel, 2008). At these high levels of ED, increases in levels of competition influence further increases in EA to a lesser extent (Barnett, 1997. For instance, competition or anti-trust policies among advanced economies tend to lower barriers to entry resulting initially in high levels of EA. Ultimately, the resultant large number of enterprises and

subsequent increase in competition tends to limit further entry. Evidence for this argument arises from the S-shaped relationship (Acs and Szerb, 2009) that indicates that increases in EA start to plateau at these high levels of ED.

The preceding discussion has shown that improvements in formal institutions have a greater impact on EA among countries at lower levels of ED. Among developed countries with already high levels of EA, those countries with incrementally higher levels of formal institutions will still enjoy increases in EA albeit to a lesser extent than less developed countries. This theory suggests that ED has a negative moderating effect on the formal institutions-EA relationship. Thus,

H3: The higher the level of ED, the lesser the positive relationship between the level of formal institutional development and the level of EA

5.2.4 The interactive effect of both informal institutions and ED

Extant research has not gone into the effects of culture and trust on the formal institutions-EA relationship. However, it does suggest that social networks substitute for very low levels of formal institutions in influencing EA particularly among countries at low ED levels (Bruton et al., 2008; De Clercq et al., 2010; Ireland et al., 2008; Khanna and Palepu, 1997, 2000; Peng, 2003; Peng and Heath, 1996). For instance, these low levels of formal institutional development cannot adequately support the complex transactions around technology type opportunities (Acs et al., 2008a; Acs and Virgill, 2010). To achieve the productive benefits of technology opportunities, a society must develop an elaborate structure of law and its enforcement (Baumol, 2002). When such formal institutions are not adequately developed, transaction costs are high and the incentives for potential entrepreneurs are low.

However, as less developed countries start to reform their formal institutions, theory suggests a positive effect of formal institutions on EA (see Hypothesis H1 above). When a fair degree of risk-taking and individualism, high levels of trust as well as numerous social networks complement this context then the positive effect of formal institutions on EA will be magnified (see Hypothesis H2).

Though this thesis does not concern itself with the direct effect of informal institutions on EA, it is worth noting recent work (Pinillos and Reyes, 2011)⁴ showing that ED can explain differences in the effect of informal institutions such as culture on EA. It is likely then that the effect of higher levels of informal institutions on the formal institutions-EA relationship will differ at different levels of ED. Indications are that an increase in ED will tend to reduce this effect of informal institutions on the formal institutions-EA relationship (see Hypothesis H3). Thus, we expect a steep relationship between formal institutions and EA at low ED levels becoming less steep at advanced ED levels.

Low ED levels are marked by a shift from factor-driven to more efficiency and innovation-driven type economic activity (Lopez-Claros et al, 2007). Among efficiency-driven economies, service activities begin to increase. This results in a sharp increase in entrepreneurial opportunities. As discussed before (see Section 5.2.4) the supply chain extends from a low base of agricultural type opportunities to include both manufacturing and service opportunities (Ciccone and Matsuyama, 1996). Service opportunities in particular have low start-up costs and will tend to increase EA significantly. These service type businesses arise from manufacturing businesses focusing on their core operations and relying on outsourced support services. In this context of low ED and increasing entrepreneurial opportunity, one expects reforms in formal institutions to have a high impact on EA.

Acs and Szerb (2009) and Rodrik (2004) observe how former less developed countries - Latvia, the Czech Republic, and Slovenia - benefited from a good relationship with the European Union (EU) as well as their formal institutional reforms. Such benefits included increased investments and opportunities for potential entrepreneurs (Rodrik et al., 2004). In another case of low levels of ED,

⁴ Pinillos and Reyes (2011) established these findings by using the GEM TEA rate that measures both necessity and opportunity motives to start businesses. At very low levels of ED, the TEA rate was still high due to the high level of necessity EA. They argued that a collectivist cultural orientation had an impact on this high TEA rate at low levels of ED. At high levels of ED, the TEA rate is again high, this time due to high levels of opportunity EA. They argued that an individualistic cultural orientation had an impact on this high TEA rate at high levels of ED.

Botswana in Africa, local customs boosted the positive effects of formal institutional reforms on EA. Acemoglu et al (2002) show how the norms and values of the Tswana people supported EA and how years of British rule reinforced these. These cases demonstrate a complementary relationship where informal relations enhanced the positive formal institutions-EA relationship.

Boettke et al (2008) compare the privatisation efforts in Poland to that of Russia. Poland's transition to a market economy was facilitated by the earlier tolerance of a small but legitimate number of private businesses throughout the communist reign. Even before the collapse of communism, Poland passed the 1988 Law on Economic Activity, which granted every Polish citizen the right to participate in private business. Although these businesses were not a dominant part of Poland's economy during the communist period, it became easier for both the populace and politicians to build on this underlying culture of private enterprise. In contrast, Russia did not have anything similar. There, control of state assets paved the way for EA among an elite few.

At high ED levels, there tends to be more reliable tax systems, more predictable and consistent laws, better established legal enforcement mechanisms, and less administrative red tape (Manolova et al, 2008; Puffer et al., 2010). At these high levels of ED, there exists already an existing culture of positive attitudes towards EA (Pinillos and Reyes, 2011; Shane, 1992). These high levels of ED also correspond to higher trust societies (Williamson, 2011).

High ED levels are marked by shifts in economic activity characteristic of innovation-challengers, innovation-followers and innovation-leaders (Acs and Szerb, 2009). High levels of HC as well as the services nature of the economy with related low barriers to entry associated with the low set-up costs of service type companies, results in higher EA among these innovation-driven economies than that within factor and efficiency-driven ones. Though opportunities continue to be high, EA will tend to increase less steeply. The high levels of HC and low barriers to entry that led to high levels of EA also results in increased competition within this advanced economic context. This increase in competition will tend to slow down the entry of further enterprises into the market.

Among these countries, existing high levels of informal institutions render further formal institutional reforms less necessary (Williamson, 2011). Evidence from the S-shaped ED-EA relationship (Acs and Szerb, 2009) suggests that higher ED levels will have a negative moderating effect on the formal institutions-EA relationship. Initial conditions also matter (Balioune-Lutz, 2009; Iyigun and Rodrik, 2004). Institutional reforms affect EA positively at low levels of EA and negatively at high levels of EA.

The preceding arguments have consolidated the S-shaped finding by suggesting that while higher levels of informal institutions show a positive moderating effect on the formal institutions-EA relationship at low ED levels, they show a negative moderating effect at high ED levels. Thus,

H4: At lower levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship increases

H5: At higher levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship decreases

5.3 Summary

In this Chapter, I found theoretical support for the following hypotheses:

- H1: The higher the level of formal institutional development, the higher the level of EA
- H2: The higher the level of informal institutional development, the greater the positive relationship between the level of formal institutional development and the level of EA
- H3: The higher the level of ED, the lesser the positive relationship between the level of formal institutional development and the level of EA
- H4: At lower levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship increases

- H5: At higher levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship decreases

The hypotheses suggested above are also summarised in a conceptual framework (Figure 5).

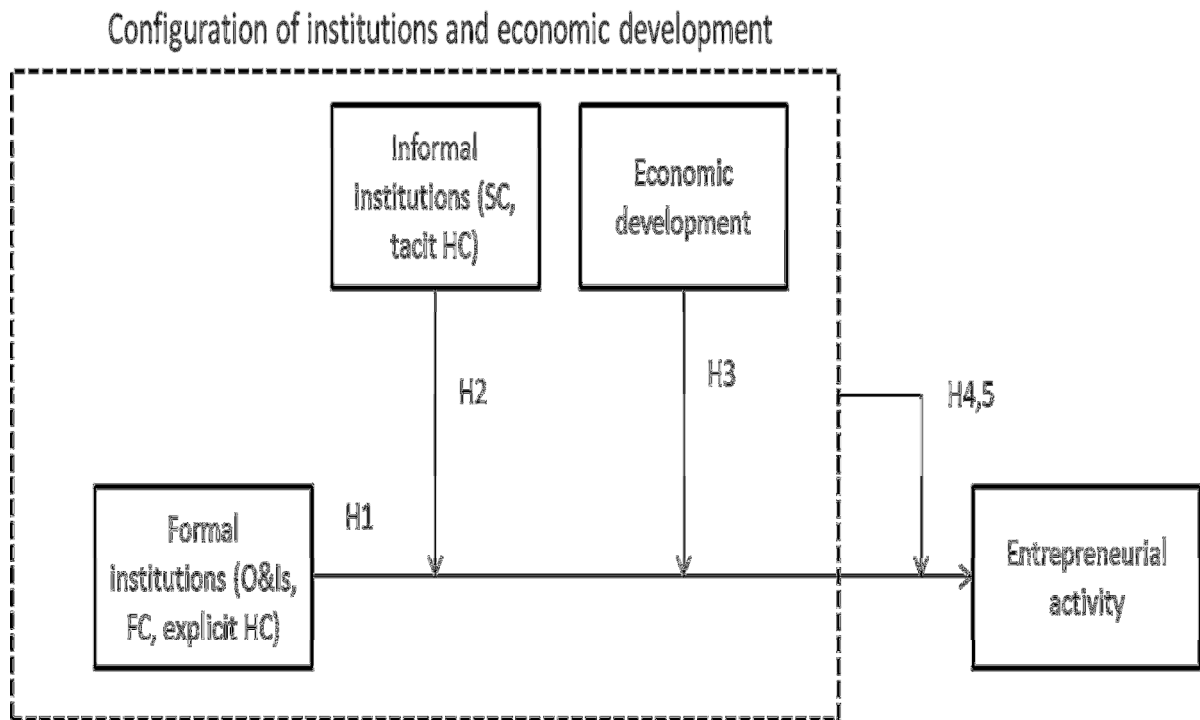


Figure 5: Conceptual framework

In general, the above conceptual framework can be specified into the following model with the last term (a three-way interaction) being of interest for the configuration approach of this research. I will test the following configuration model.

$$EA = b_0 + b_1(ED) + b_2 (Formal) + b_3 (Informal) + b_4(ED) (Informal) + b_5(ED) (Formal) + b_6 (Formal) (Informal) + b_7(ED) (Formal) (Informal)$$

Where:

EA = cross-country entrepreneurial activity

ED = economic development

Formal = formal institution

Informal = informal institution

b_0 = estimated constant (later I will explain how heterogeneous country effects are included in this term)

$b_1...b_7$ = estimated coefficients

ε = unobserved explanatory possibilities (error/residual)

Though ED is an explanatory variable, it is not entirely an exogenous variable. Extensive research confirms the endogeneity of ED with respect to EA (Blau, 1987; Acs et al., 1994a; Carree et al., 2002; Carree and Thurik, 2003; Wennekers et al., 2005; Carree et al., 2007; Acs et al., 2008a; Thurik et al., 2008). This will become important when empirically testing these equations.

6. Methodology

To test its hypotheses, this thesis relies on a quantitative approach with underlying hierarchical multiple regression analysis. The regressors included not only explanatory variables themselves but also multiples of explanatory variables. This was necessary since we test moderating or interaction effects by multiplying the explanatory variables that have a conditional effect on one another. Hierarchical multiple regression can test the significance of the variance in cross-country EA due to the addition of two-way and three-way interaction terms. Since the thesis relied on eight years of secondary data from the World Bank and GEM database, I applied panel analysis methods to the regressions.

First, I present the details of the population and sampling frame. Next, the instrumentation and data collection are detailed. This includes a discussion on the validity and reliability of the instrument. Thereafter this Chapter describes the variables. This also includes a discussion of the reliability and validity of the study variables. The Chapter ends with a detail discussion of the analysis. This includes a description of interaction analysis, model specification and estimation, regression assumptions, as well as violations and remedies.

6.1 The research population

Country units of analysis were necessary for this macro-level study. The research population consisted of all possible countries, including both developed and less developed economies. As shown earlier, developed economies tended to be innovation-driven whilst less developed economies tended to be either factor or efficiency-driven (Schwab and Sala-i-Martin, 2010). Currently there are some 196 countries in the world (Rosenberg, 2011).

6.2 Sample size and selection

The secondary nature of the data dictated that sampling and sample size be dependent on the research designs⁵ of GEM and the World Bank Group

⁵ I used WBGES only to gather data on the number of newly registered companies per year against the GEM country sample.

Entrepreneurship Survey (WBGES). I collated data for 45 countries over the years 2000 to 2007. I grouped the data were grouped by country and year, resulting in 176 country-year observations. Table 7 below shows the sample of countries and their respective stage of ED at the time of sampling. The data was unbalanced with a minimum of one panel observation to a maximum of eight. This resulted because countries did not participate consistently over the eight years with some added to the survey sample later (for example in the GEM survey, lower-income countries were added later in the research).

Table 7: Sample of countries at respective stages of ED

	Factor-driven	Efficiency-transformers	Innovation-challengers	Innovation-followers	Innovation-leaders
1	Argentina	Croatia	Chile	Austria	Australia
2	Brazil	Greece	Hong Kong	Belgium	Canada
3	Philippines	Hungary	Italy	Czech Republic	Denmark
4	Serbia	India	Latvia	France	Finland
5	Turkey	Indonesia	Malaysia	Germany	Iceland
6		Jamaica	Portugal	Israel	Ireland
7		Poland	Spain	Japan	Netherlands
8		Romania		Singapore	New Zealand
9		Russia		Slovenia	Norway
10		South Africa			Sweden
11		Thailand			Switzerland
12					United Kingdom
13					United States

Source: Adapted from Aces and Szerb (2009)⁶

There were 31 developed countries and 14 less developed countries (see Table 8 below). A comparison of Tables 7 and 8 reveals that the majority of less developed countries are either in the factor-driven, or in the efficiency-transformation stage of ED. Most developed countries are at the innovation-driven stage of ED. However, within the innovation-driven stage there are 'leaders', 'innovation followers', and 'innovation challengers' (Acs and Szerb, 2009).

Participation in the GEM project was initially reliant on the financial support for researchers in those countries keen to participate (Reynolds et al., 2005). Hence, when the GEM project started, countries included in the project reflected the emergence of groups of researchers that could raise the funds to participate in the project. As a result, the GEM sample initially represented developed countries - the G-7, most OECD countries and almost the entire EU - with a smaller group of less developed countries in Asia and Latin America.

Table 8: Sample of countries: less developed and developed economy classification

	Developed	Less developed
1	Australia	Argentina
2	Austria	Brazil
3	Belgium	Chile
4	Canada	India
5	Croatia	Indonesia
6	Czech Republic	Jamaica
7	Denmark	Malaysia
8	Finland	Philippines
9	France	Romania
10	Germany	Russia
11	Greece	South Africa
12	Hong Kong	Serbia
13	Hungary	Thailand
14	Iceland	Turkey
15	Ireland	

⁶ There might have been some changes in GEM expert perceptions (see Section 6.3 next) since the gathering of this data in the period 2000 to 2007. Acs and Szerb (2009) performed their analysis two years later. This is a possible limitation.

	Developed	Less developed
16	Israel	
17	Italy	
18	Japan	
19	Latvia	
20	New Zealand	
21	Netherlands	
22	Norway	
23	Poland	
24	Portugal	
25	Singapore	
26	Slovenia	
27	Spain	
28	Sweden	
29	Switzerland	
30	UK	
31	US	

Source: World Bank (2010)

GEM first conducted research in 1999. This research analysed 10 countries: the G7 countries (i.e., Canada, France, Germany, Italy, Japan, United Kingdom and United States) and three additional countries, Denmark, Finland and Israel because some researchers of these countries had relevant expertise. By 2008, GEM had conducted annual assessments in 66 countries, covering more than 80% of world population and almost all nations with globally significant economies (Acs et al., 2009b). Fifty-three countries participated in the GEM 2010 research.

6.3 Instrumentation and data collection

6.3.1 Research instrument

The research instrument was combined from the GEM expert survey, GEM individual survey, WBGES, and the International Monetary Fund's efforts in collecting economic data. Appendix 1 details the indicators and measures of this research. It also shows the item loadings and Chronbach reliability results for scale indicators.

I located fourteen indicators that relate to either formal or informal institutions. This identification process was facilitated by determining whether the indicators contributed towards explicit or tacit HC, SC, FC or O&Is. Indicators linked to

explicit HC, FC and O&Is were categorised as formal institutions. Indicators linked to SC and tacit HC were categorised as informal institutions (see Section 4.3).

Thirteen scale indicators were sourced from the GEM expert survey, which probes the adequacy of EFCs within each country. One indicator, 'Knowent', was taken from the GEM individual survey. This indicator asks the potential entrepreneurs of each country whether they "know someone personally who started a business in the last two years". Reynolds et al (2005) discusses in detail the methodology of both the GEM expert and individual surveys.

The EFCs (see Table 9) measured conditions for EA such as financial support, entrepreneurial content of primary and higher education, business services, market conditions, policy and regulatory conditions, R&D conditions, general entrepreneurial capacity and, culture and social image. GEM measured each with multiple-item scales comprising three to seven questions. The standard expert survey contained 88 questions with responses collected on a five-point Likert scale. The Likert's scale of 5 points delineates into, Completely False (1), Somewhat False (2), Neither True Nor False (3), Somewhat True, (4) or Completely True (5). I weighted the multi-item scale on the factor loadings of individual scale items. The next sub-section describes these. .

Table 9: GEM EFCs used in this research

EFC	Abbreviation	Description	Institution
Entrepreneurial finance	Fin1	The availability of equity and debt for small and medium enterprises (SMEs). Included here are also grants and subsidies.	Formal
	Fin2	The availability of private equity	
Government policy	GPR	The extent to which taxes or regulations are either size-neutral or encourage SMEs.	Formal
Education and training	Prim High	The extent to which training in creating or managing SMEs is incorporated within the education and training system at all levels (primary, secondary and post-school).	Formal

EFC	Abbreviation	Description	Institution
R&D transfer	RDev	The extent to which research and development leads to new commercial opportunities and whether or not these are available for new, small and growing enterprises.	Formal
Entry regulation	MOpe MDyn	Contains two components: (1) Market Dynamics: the level of change in markets from year to year, and (2) Market Openness: the extent to which new enterprises are free to enter existing markets.	Formal
Cultural and social norms	ECul	The extent to which existing social and cultural norms encourage, or do not discourage, individual actions that may lead to new ways of conducting business or economic activities and might in turn, lead to greater dispersion of personal wealth and income.	Informal
Entrepreneur social image	ESIm	The extent to which people consider that becoming an entrepreneur is a desirable career choice and that entrepreneurs have a high level of status and respect.	Informal
Entrepreneurial capacity	ECap	The extent to which people know how to start and manage a business.	Informal

Source: Adapted from Kelly et al (2011)

6.3.2 Reliability and validity of instrument

The validity of an instrument indicates how well its measures represent the variables, while reliability refers to the consistency with which it produces results when one repeats the research some reason (Leedy and Ormrod, 2005).

6.3.2.1 Validity

The literature contains limited indication of the key dimensions of a country's institutional environment (Bowen and De Clercq, 2008). I rely on GEM EFC measures to represent institutions. The GEM model accumulates individual-level characteristics to the structural conditions that regulate the allocation of effort into EA at the population level. I checked for adequate face and construct validity by reviewing the measures against their theoretical descriptions. GEM EFCs result from a survey of experts with a range of backgrounds and knowledge about their country. The expert-survey assesses the views of experts on the institutional

environment through standardised questions and validated measurement scales (De Clercq et al, 2011b). Levie and Autio (2008) suggest that one could view EFCs as defining the rules of the game for EA activity in any given context. This follows closely to North's depiction of institutions as rules of the game. They also give a detail review of the GEM EFCs and the theoretical background starting with the work of Leibenstein (1968). In Table 9, I have positioned finance, government policy, education and training, R&D transfer and entry regulations as formal institutions. I position as informal institutions the cultural and social norms, entrepreneur social image, entrepreneurial capacity, and commercial and legal infrastructure.

Institutional theorists have adequately articulated government policy and entry regulations as formal institutions (North, 1990; Scott, 1995). Whitley (1994) and Bowen and De Clercq (2008) motivate financial and educational systems as dimensions of formal institutions. Thus, I added finance as an indicator of formal institutions since most countries regulate the financial markets. For instance, measures of debt provision indicate financial conditions. The central bank regulates the cost of debt. The GEM measures of financial conditions also include government subsidies. I also included education and training as a formal institution since government education departments often control syllabi. I also considered the R&D transfer EFC as a formal institutional dimension since its measures relate to formal initiatives as the transfer of, new technology, science, and other knowledge from universities and public research centres to new and growing firms. This R&D transfer EFC also considers the adequacy of government subsidies for new and growing firms to acquire new technology. It also considers whether the country supports engineers and scientists to have their ideas commercialized through new and growing firms.

Bowen and De Clercq (2008) confirm the validity of the policy EFC as a formal institution dimension by correlating it with the World Bank's "regulatory burden" index. They obtained a value of 0.41 ($p < .02$) for 2002 and 0.48 ($p < .01$) for 2004. Based on Whitley's (1994) work on national business systems, De Clercq et al motivated for the use of the GEM finance and education and training EFCs as indicators of formal institutions. There is no prior support for my use of the R&D

transfer EFC as an indicator of a formal institution. This is one of the limitations in my study.

Earlier, I argued that the normative and cognitive institutional framework defined by Scott (1995) fit within the informal institutional framework of North (1990). According to Peng et al (2009), the scheme of formal and informal institutions complements Scott's (1995) idea of three supportive pillars: regulative, normative, and cognitive. Formal institutions correspond to the regulative pillar while informal institutions correspond to both normative and cognitive pillars. While the cognitive pillar corresponds specifically to the cultural aspect of informal institutions, the normative pillar corresponds particularly to the norms within informal institutions.

Previously, De Clercq et al (2010) and Danis et al (2010) used the GEM EFC on entrepreneurial capacity to indicate cognitive type institutions. The same researchers used the GEM EFC on entrepreneur social image to indicate normative type institutions. The researchers validated the entrepreneurial capacity EFC as a cognitive type indicator by finding a positive correlation with it and the strength of a country's educational system with respect to entrepreneurship. In turn, they validated the entrepreneur social image EFC as a normative type indicator by finding a positive correlation with and a question from the GEM adult population survey, "In your country, most people consider starting a new business as a desirable career choice." Though prior research did not make use of the cultural and social norms EFC, I find that it correlates to the entrepreneur social image EFC (0.75 at the .05 significance level)⁷.

I also checked the convergent validity of each EFC. Item factor loadings for all EFCs were above 0.5 (see Appendix 1). This suggested adequate convergent validity.

External validity requires that the research findings be generalizable to the broader population of countries with a variety of characteristics (Leedy and

⁷ See Section 6.8.3

Ormrod, 2005). This research sampled a combination of both developed and less developed countries at varying levels of institutional development.

Later, I note the choice of a random effect specification. In panel data analysis, a random effect specification generalizes better than a fixed effect specification (Koop, 2008). GEM tests the EFCs on expert views rather than the views of individual entrepreneurs themselves. This limits the external validity of EFCs (Levie and Autio, 2008).

6.3.2.2 Reliability

The reliability of a measure refers to the extent to which others can replicate the research to arrive at the same measurement outcomes. Hence, the outcome does not depend on the observations or subjective judgments of one or a small number of individuals. Researchers often increase their confidence in a measure's reliability by determining the correspondence between two similar procedures for measuring the same event. One can also duplicate measures of the same event (Reynolds et al., 2005).

To ensure reliability of the GEM expert survey procedure, country teams were encouraged to administer the questionnaire at the end of the interview. They then waited for the expert to complete this on his or her own. It was also convenient to have a researcher available to answer any questions (Reynolds et al., 2005).

GEM refined some EFC items between 2000 and 2006. Though this led to better internal reliability of the multi-item scales, almost all scales already featured good reliability - Chronbach alpha of 0.7 or greater - throughout this period. The internal reliabilities of the multi-item scales employed in 2006 range from 0.76 to 0.94. Validity checks with proxies from secondary sources suggested good external validity for the scales employed (Reynolds et al., 2005).

The number of cases was substantial. There were over 990 cases from 21 countries for 2001 to over 1300 cases for 31 countries for 2003. By 2003, when the interview schedule had been revised four times, the reliability of all 17 multi-item scales was 0.63 or higher. Fifteen were 0.70 or higher, and seven were 0.80 or higher. This was consistent with standards for index reliability in social science.

GEM achieved this despite the complex nature of the topic, the multi-country administration, and the complexities of ensuring cross-country harmonisation. These scales, and the individual questionnaire items, were utilised in the development of country reports as well as specialised cross-country analyses (Reynolds et al., 2005).

Nevertheless, I still conducted a factor analysis on all EFC items using all eight years of data. I first used principal components analysis to confirm the number of factors against the respective EFC items and to develop estimates. These estimates were then entered into Promax oblique rotation and Kaiser normalization routines to determine the factor loadings.

This thesis's factor analysis confirms some of the findings of Levie and Autio (2008) (see Appendix 2). It confirms that the Education and Training EFC (see Table 9 above) as well as the Entry Regulation EFC have two separate components. Whilst Levie and Autio (2008) also found that the Government Policy EFC has two separate components, I found one. Their factor analysis found that the GEM items separate out into two scales: a policy and a regulation scale. The Government Policy EFC tests the support of EA through policies and regulations. Reynolds et al (2005) suggest that as items are revised to improve reliability, these might later become one scale.

Levie and Autio (2008) do not discuss the details of their factor analysis procedure. Their research and this differs by the number of years of data that were used. Whilst this research uses eight years of data they used seven years. In the early years before 2003 there were missing data for some items within the Government Policy EFC because additional items were introduced after 2002 (see next section on Data collection). They do not disclose whether they left out the data from their factor analysis or imputed values. In this research, values were imputed by using the country average over the data collection period.

I label the two components of the Education and Training EFC as "Prim" for primary and secondary education and "High" for post-secondary education. I label the two components within the Entry Regulation EFC as 'Mope' for market openness and 'MDyn' for market dynamics (see Table 9).

I drew one item “knowent” from the GEM research on potential individual entrepreneurs. For this reason, I will discuss some aspects of its reliability and validity. Reynolds et al (2005) point out that there were several cases where a GEM replicated the country survey for the same period. This included South Africa and Ireland in 2001. In 2003, it included Uganda. In South Africa and Ireland, GEM used different survey firms to administer the interview with similar sampling procedures. In Uganda, the same firm did both surveys with a different operational procedure. In all three examples, the levels of EA estimated for the same regions were not significantly different. The GEM measures were also theoretically verified (Reynolds et al., 1994)

6.3.2.3 Common method bias

Researchers using GEM data have not discussed common method bias (CMB). CMB arises from the measurement method rather than to the constructs that the measures represent (Podsakoff et al., 2003). Measurement error has a random and a systematic component (Le et al., 2009). Systematic measurement error presents a serious problem because it might explain the observed relationship between the measures of the different constructs independent of the one hypothesized (Podsakoff et al., 2003). When present, it has a confounding influence on empirical results yielding potentially misleading conclusions. If the measure of the independent variable and dependent variable share a common method, this method might exert a systematic effect on the correlation between the measures.

Podsakoff et al (2003) advise that one avoid CMB by obtaining the measures for the dependent and explanatory variables from different sources. In this research, the dependent variable, EA, was sourced from the WBGES database whilst the explanatory variables were sourced from GEM and the IMF databases.

Measurement error might occur when respondents attempt to be consistent with the same rater. Measures sourced from the World Bank would have had different respondents and raters to those of GEM. Item characteristic and context effects would also differed due to very different measurement instruments used between the World Bank and GEM as well as the dependent variable, EA, being

qualitatively different from explanatory measures like GDP, and institutional measures which were actually a scale of five to six individual items.

6.4 Data collection

Overall, the research collated 176 country year observations. The final data at a country level was aggregated from expert and individual survey results. The aggregation of the expert survey was based on the mean of the 36 expert responses per country.

For the individual survey, a weighting procedure was used in addition to a calculation of the mean for each measure (Reynolds et al., 2005). These weights controlled for the proportions of different subgroups - gender and age - done to match the most recent official data providing descriptions of the entire population of the country. The basis for weighting varied somewhat among countries. While gender and age were always involved, other features that were used included geographic distribution, ethnic background, educational attainment, household income, or a range of other factors considered appropriate in a specific country (Reynolds et al., 2005).

It was considered appropriate to use the informed judgments of country experts on the status of EA in their own countries. GEM selected experts based on their reputation and experience. Technically, these groups are samples of convenience. The focus of these face-face interviews was on the experts' views of country strengths and weaknesses. This indicated the context for EA and the policy or program changes that could enhance the level of EA in their country.

Since there was no available list of entrepreneurial experts for any GEM country, representative samples were not feasible. However, GEM researchers ensured that the chosen experts had a substantial range of background and knowledge on the respective countries. Country research teams were responsible for using their own networks and contacts within the country to select four individuals that were experts for each of the main nine EFCs. The respondents in each category consist of at least one entrepreneur, two suppliers and one observer, such as an academic with specific expertise in the area.

The requirements for a new set of experts in each year were relaxed for smaller countries (such as Iceland, Israel and Singapore) and all country teams were encouraged to contact experts from previous years as respondents for the self-completed mail questionnaire. Once contacted with a detailed explanation of the project, virtually all country experts agreed to participate in the interview. Most failures to complete the interview reflected scheduling complications common to active professionals (Reynolds et al., 2005). Researchers conducted personal interviews in the office of the expert respondents. They made an effort to limit them to 45 minutes since these were generally very busy individuals. They conducted them in the language appropriate to the individual expert and the country.

There were cases of missing data especially in the early years 2000 to 2002 (see Table 10 below). For instance in some cases a 6th measure was introduced into an EFC that previously had only 5 item measures. In fact, some measures were introduced later when certain countries were not participants in the GEM research. To retain all 176 observations I used the country averages to impute data on missing values.

Table 10: An indication of missing values

				Observations less than		
Measure	Observations equal to	Observations greater than	Observations less than	Unique values	Min	Max
Start-up	6		170	170	.027	.19
Entrepreneur social image - In my country, most people think of entrepreneurs as competent and resourceful individuals	1		175	128	1.98	4.69
Entrepreneurial culture - In my country, the national culture is highly supportive of individual success achieved through own personal efforts	1		175	141	1.5	4.83

				Observations less than		
Measure	Observations equal to	Observations greater than	Observations less than	Unique values	Min	Max
Entrepreneurial culture - In my country, the national culture emphasizes self-sufficiency, autonomy and personal initiative	1		175	126	1.62	4.56
Entrepreneurial culture - In my country, the national culture encourages entrepreneurial risk-taking	1		175	131	1.35	4.54
Entrepreneurial culture - In my country, the national culture encourages creativity and innovativeness	1		175	132	1.97	4.49
Entrepreneurial culture - In my country, the national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life	1		175	135	1.53	4.53
Higher education - In my country, the vocational, professional and continuing education systems provide good and adequate preparation for starting up and growing new firms	55		121	94	1.83	3.63
Regulations - In my country, coping with government bureaucracy, regulations and licensing requirements is not unduly difficult for new and growing firms	55		121	106	1.26	4.17
R&D transfer - In my country, there is good support available for engineers and scientists to have their ideas commercialized through	55		121	102	1.53	3.83

				Observations less than		
Measure	Observations equal to	Observations greater than	Observations less than	Unique values	Min	Max
new and growing firms						

6.5 Variables

The variables and their respective indicators are summarised in Table 11 below. I will discuss these variables in more detail below and end with a discussion on their reliability and validity.

Table 11: Variables and respective indicators (see table 9 for an expansion of abbreviations used here)

Variable	Type	Indicators on research instrument
EA	Dependent	Start-up
ED	Explanatory	lgGDPcap
Informal	Explanatory	ECap, Know, ECul, ESIm,
Formal	Explanatory	GPR, RDev, MOpe, MDyn, Prim, High, Fin1, Fin2
Control	Control	Number of existing registered companies, Country, Year

6.5.1 EA

This research uses the start-up rate as an indicator of EA. Virgil (2009a) used WBGES data dividing new company registrations by total registrations in that year to arrive at what she refers to as start-up rates per country. The WBGES start-up rates exclude informal sector initiatives (Klapper and Delgado, 2007; Klapper et al., 2009). This measure of EA is appropriate for policy targets of economic growth and the formal activity that generates tax income. Particularly, high-growth entrepreneurs tend to register their ventures (Levie and Autio, 2011). These start-up rates correlate linearly to GDP. WBGES defines the unit of measurement of entrepreneurship as:

“Any economic unit of the formal sector incorporated as a legal entity and registered in a public registry, which is capable, in its own right, of incurring liabilities and of engaging in economic activities and transactions with other entities” (Klapper and Delgado, 2007; Acs et al., 2008b).

Researchers have tended to criticise the GEM TEA data since it does not reflect the assumed linear relationship between ED and EA (Acs, 2006). It also does not capture entrepreneurship in existing businesses, data is inconsistent and respondents in different countries might interpret questions differently (Hindle, 2006; Godin et al., 2008). Since TEA accounts for both formal and informal EA, researchers should not use it as a simple ranking (Bosma et al., 2009).

I tend to agree with the argument that the largely opportunity EA approximated here by formally registered businesses indicates EA better than necessity EA (Shane, 2009). In particular, opportunity EA is useful for a study that includes ED considerations. The GEM TEA rate includes both necessity and opportunity EA. GEM TEA rates are high at low-income nations due to high necessity EA. Necessity EA decreases as national income increases resulting in a decreasing relationship between ED and EA. At middle to high-income levels opportunity EA starts to increase and the TEA rate then picks up. The resultant U-shaped curve of GEM TEA data might mislead policymakers. They might incorrectly interpret advances in stages of ED with changes in the quantity of entrepreneurship, when quality is of greater import (Acs and Szerb, 2009).

In cases where GEM data has to be used, Acs (2006) suggests that one plots the opportunity to necessity entrepreneurship ratio against GDP per capita. This ratio underlies the importance of the desirable, opportunity EA relative to the necessity-induced EA. The advantage of this ranking is that countries with high levels of necessity EA are then associated with low levels of EA.

Instead of using GEM data, one can use instead WBGES data. Whilst GEM data measures the potential for EA, WBGES data measure actual EA albeit at a formal level (Acs et al., 2008b). Studies using WBGES and GEM data give different results. While GEM data does not relate to administrative barriers to EA, a significantly negative effect exists with WBGES data (Klapper and Delgado, 2007; van Stel et al., 2007). Acs et al (2008b) attribute this and similar

contradictory results in the empirical entrepreneurship research to the differences in what the data captures.

Desai (2009) suggests that the GEM nascent entrepreneurs do not experience any administrative barriers, since there is no formalization condition. Nascent entrepreneurs have often not yet registered businesses. However, since the WBGES dataset measures registered businesses, respondents would have faced administrative barriers. Respondents in the GEM dataset do not report on administrative barriers simply because they do not encounter them, not because they are not a problem.

6.5.2 ED

I measured ED by means of GDP per capita data available from the IMF website. This aligns with to the World Bank's main criterion for classifying economies viz. gross national income (GNI) per capita. Based on its GNI per capita, the World Bank classifies every country as low, middle, or high-income. They sometimes refer to low-income and middle-income countries as less developed or developing economies. The use of the term is convenient. It does not imply that all countries in the group are experiencing similar development or that other countries have reached a preferred or final stage of development (World Bank, 2010). Porter et al (2002) also used GNI per capita to arrive at their factor, efficiency, and innovation-driven classification of economies. Factor-driven economies have generally low per capita incomes whilst efficiency-driven economies have middle per capita incomes. Innovation-driven economies enjoy high per capita incomes.

It takes some time for entrepreneurs to identify and then exploit the opportunities arising out of any technology changes out of a country's efforts at ED. I lagged the ED variable by one year to account for the delay in ED affecting EA. Chapters 1 and 4 acknowledged that EA affects ED. Thus, ED is endogenous. The use of lagged GDP also controls for endogeneity or reverse causation, in the regression analysis. Section 6.5 goes into this in detail.

6.5.3 Informal institutions

6.5.3.1 Social capital

Extant research tends to use the World Values Survey to measure SC. Researchers rely on measures of generalised trust and associational activity (Danis et al., 2010) to indicate the levels of SC within a country. However, among some countries, like those in transition to a market-driven economy, personal trust plays a more significant role than generalized trust (Puffer et al., 2010). Though important, measures of associational activity might not adequately capture the structural and relational complexity of social networks (Burt, 1992; Granovetter, 1992).

Thus, this research turned to measures of SC relating to its structural, relational, and cognitive nature (Nahapiet and Ghoshal, 1998). Structural SC (see Chapter 4) considers the structure of the overall network of relations whilst relational SC considers the quality of potential entrepreneurs personal relations (Granovetter, 1992). Cognitive SC considers the degree to which an individual shares a common code and systems of meaning with his or her community (Nahapiet and Ghoshal, 1998).

Liao and Welsch (2003) successfully located measures within PSED data to assess the SC of entrepreneurs. This research thus looked for corresponding PSED type within the GEM research design. I thus used the GEM indicators Know, ECul, and ESIm for SC (see Table 11 above). See Table 9 for the abbreviations). 'Know' was derived from the GEM individual measure 'Knowent', which probes if an individual has interacted with another entrepreneur over the last two years. I use it here to indicate structural SC. Liao and Welsch (2003) used PSED items, "Many of my friends have started new firms," and "Many of my family and kin have started new firms." Klyver et al. (2008) validated the GEM item "Knowent" as a measure of structural SC. For the purposes of arriving at a country level item of structural SC, I calculated the percent of 'yes' responses per country.

The item measures for EFCs such as ECul and ESIm are shown in Appendices 1 and 2. Appendix 2 shows the output of the factor analysis for each EFC. A review

of SC measures used in both PSED 1 and 2 (Curtin et al., 2009) showed that the items for cognitive SC relate to the GEM EFCs 'social and cultural norms' and 'social image'. Thus, I link ECul and ESIm to cognitive SC conditions. ECul and ESIm measure the local society's views and attitudes towards entrepreneurs.

6.5.3.2 Tacit human capital

Section 4.3.2 showed that HC comprises of both explicit and tacit knowledge development. Curtin et al (2009) have used PSED data on work experience as a more tacit or informal form of knowledge development. Within the GEM data, I located the entrepreneurial capacity EFC to capture tacit HC (see Appendix 1). This EFC looks at the practical aspects of starting enterprises such as knowing how to start an enterprise and having experience in starting a business as well as the ability to organize the resources required for a new business.

6.5.4 Formal institutions

6.5.4.1 Financial capital

The GEM EFC for finance consists of items that probe the support of EA through financial considerations that relate to equity, debt, government subsidies, private funding, and venture capital funding in each country. A principal components analysis confirmed whether the finance EFC items formed a single factor. The factor loading estimates from the principal components analysis were then entered into Promax oblique rotation and Kaizer normalization routines to determine the final factor loadings. The results showed that the Finance EFC comprised of two scales. I labelled these 'Fin 1' and 'Fin2' (see Table 11 above). The results were used to indicate FC conditions and are shown in Appendix 2.

'Fin1' indicates general finance relating to government funding as well as general debt and equity finance. Fin 2 indicates mainly private equity type funding and probes for the support available to entrepreneurs from venture capital, angel financing and initial public offerings.

6.5.4.2 Explicit human capital

PSED data on education represent an explicit or more formal development of knowledge (Curtin et al., 2009). Within the GEM data, I located the primary and higher education EFCs to align with the education type measures of HC conditions.

Like the analysis performed by Levie and Autio (2008), the factor analysis of this research also resulted in the separation of the education and training EFC into two scales viz. (i) primary and secondary level education and training and (ii) post-secondary level education and training.

6.5.4.3 Opportunity and incentives

I have found that adapting a combination of Hoffman (2007) and Lundstrom and Stevenson's (2005) categorization of entrepreneurship policy factors useful in developing indicators for the variable O&Is (see Table 12 below). Hoffman and Gabr (2006) operationalised entrepreneurial O&I conditions through several policy areas like entry barriers, regulations, access to foreign markets, technology transfer, private demand conditions and procurement regulations. On the other hand, Lundström and Stevenson (2005) operationalised the same factor in terms of the support environment for EA. This included the availability of information, advice, capital, contacts, technical support, and business ideas as well as the ease of access to these resources. Opportunity also encompasses the regulatory environment as well as the processes of government administration (see Section 4.3.3).

I simplified Hoffman's model by combining their opportunity and motivation factors affecting EA into a single variable called 'entrepreneurial opportunity and incentives', in line with Lundstrom and Stevenson's (2005) operationalization of entrepreneurial opportunity. Among others, Hoffmann (2007) located administrative burdens and labour market regulations as policy incentives for EA.

Hoffman (2007) associated the policy area called 'restart possibilities' with entrepreneurial ability. I located this under O&I conditions since by bankruptcy legislation tends to give rise to opportunities to restart a business. Hoffman

(2007) considers lenient bankruptcy legislation as an incentive. I locate this under the factor entrepreneurial O&Is. Verheul et al (2001) concur by arguing that fiscal incentives, subsidies, labour market regulation, and bankruptcy legislation co-determine the net rewards and the risks of the various occupational opportunities.

Table 12: Possible indicators of the variable ‘Opportunity and incentives’

Opportunities and incentives
Entry barriers / deregulation
Access to foreign markets
Technology transfer
Private demand conditions
Procurement regulation
Personal income tax
Business taxes and fiscal incentives
Social security discrimination
Administrative burdens
Labour market regulation
Bankruptcy legislation, restart possibilities

From the GEM expert survey (see Table 9 above), I associated Government Policy, R&D Transfer and Entry Regulations to the corresponding items of O&Is of Table 12 above. Like Levie and Autio (2008), the factor analysis here resulted in the Entry Regulation EFC splitting into two scales viz. (i) market dynamics and (ii) market openness.

6.6 Control variables

In general, one should account for all possible explanatory variables associated with cross-country EA. Otherwise the resultant model faces the risk of omitted

variable bias (Koop, 2008). However, including irrelevant variables, ones with no explanatory power, lead to less precise estimates of regression coefficients and over-fitting. Playing off these two competing considerations is an important empirical exercise.

A prevalence of existing companies influences EA in a number of ways. Entrepreneurs might regard existing business owners as role models. Existing companies also require input services and materials that start-ups can provide. This research acknowledged the influence of the prevalence of existing companies. It does this by standardising the measure of EA, dividing new company registrations by total registrations for that country (Virgil, 2009a; Acs et al., 2008).

Most studies on cross-country EA control for ED. I account for ED more explicitly by considering it as a key explanatory variable. In addition, by conducting a panel analysis, I control for a number of country and year effects whether fixed or random.

At first, as Levie and Autio (2008) did, all remaining GEM EFCs that were not part of the configuration term were also regressed to EA. They were often either not significant or not as significant as the effects of the three variables making up the configuration. Some of the remaining EFCs posed a multicollinearity threat since they correlated more than 0.7 with the main explanatory variables. Thus, for consistency, I developed simple models without these remaining EFCs as controls. The random effects, measuring for unobserved country and time heterogeneity, also contributed towards the control of unobserved explanatory possibilities (See Section 6.5).

Olson (1996), though explaining wealth across countries and not EA, argued that since institutions influence the action of economic agents, one can rule out such considerations as population level and migration. Levie and Autio (2008) add the square of GDP to control for the non-linearity observed in the U-shaped curve using TEA data (Bosma et al., 2009). I find no need to do this since WBGES data results in a linear relationship between GDP and EA (Virgill, 2009b).

6.7 Reliability and validity of research design

External validity accounts for the ability of the research to be generalised across countries (Leedy and Ormrod, 2005). This would require the use of a random and representative sample. As discussed in Section 6.2, the sample used for this research is convenient by nature. In the random effects approach (see Section 6.8), findings can be generalised beyond the sample (Baltagi, 2001).

Omitted variable bias can reduce the validity of a model. Panel analysis, in general, accounts for a major portion of the variation in EA due to country heterogeneity e.g. the demographic differences, typically accounted for by control variables. Panel analysis thus reduces omitted variable bias considerably.

To increase external validity, I also replicated the research with different indicators of the same variable. Thus, the contingent effect of informal institutions was tested first by 'entrepreneur social image' and then by 'entrepreneurial culture' and 'entrepreneurial capacity'. The theory supports these indicators (See Section 4.3).

This replication approach, aside from enhancing validity, also enhances reliability. The reliability of a measure refers to the extent to which other researchers can replicate the measurement outcome. Correspondence between two similar indicators like Fin1 and Fin2 confirms reliability.

6.8 Data analysis

This research makes use of panel data to examine for interaction effects in a multiple regression analysis. There are two kinds of information in panel data. First, cross-sectional information reflects in the differences between countries. Second, time-series information reflects in the changes within countries over time. Panel data regressions allow one to take advantage of these different types of information (Wooldridge, 2002). Software used to conduct both a hierarchical regression and a multilevel analysis as is the case when using panel data is still evolving (Autio and Acs, 2010).

It is not optimal to use ordinary multiple regression techniques on panel data. Such regression techniques might lead to incorrect estimates of coefficients since they are subject to omitted variable bias - a problem that arises from unknown variables. This type of bias also occurs when difficult-to-observe variables affect the dependent variable. Panel data analysis makes it possible to control for some types of omitted variables even without observing them. One achieves this by instead observing changes in the dependent variable over time. This controls for omitted variables that differ between cases but are constant over time. Panel data analysis also controls for omitted variables that vary over time but remain constant between cases (Wooldridge, 2002).

Below I discuss the details of the interaction method, the choice of random effects estimation and its related assumptions.

6.8.1 Interaction analysis

Whilst most business researchers have tended to analyse the regression in a stepwise and hierarchical approach they go about analysis in different ways. This makes it difficult for a beginner researcher to find an exemplar on how to conduct interaction analysis. For instance, some go directly into interaction hypotheses without suggesting a direct effects hypothesis but still model the direct effects (De Clercq et al, 2010b). Most use control variables as a first step and others (Cox and Beier, 2009) go directly into analysing the main effects as a first step. In hierarchical regression, many researchers do not consider the coefficients of prior steps but only the significance of the change in the overall model as one completes the regression steps. Wiklund and Shepherd (2005) also look to the final step to test their direct effects hypothesis. Moreover, software to analyse an integration of hierarchical regression and panel data analysis simultaneously is limited (Autio and Acs, 2010).

Researchers often refer to an interaction analysis as a moderating variable analysis. It involves creating an interaction term by multiplying two or more explanatory variables together in a regression equation. Cohen and Cohen (2003) advise that all lower order terms, for example the primary explanatory variables on their own be included in the regression equation. This thesis

necessitates the use of an interaction analysis since it relies on modelling the effects of the simultaneous interaction of formal and informal institutions as well as ED on EA. This results in a three-way interaction term.

While contingency analysis (Lumpkin and Dess, 1996) examines the interactions between two explanatory variables, a configurational approach examines for interactions between three explanatory variables (Wiklund and Shepherd, 2005). I thus relied on a configurational approach to model the respective interactions. I used hierarchical linear regression to regress the ED and respective variables of formal and informal institutions against EA. Preacher (2010) gives guidance on how to conduct a three-way interaction analysis (see quote below).

"Treatment of 3-way and 4-way interactions proceeds in much the same way as for 2-way interactions. To form the 3-way interaction term, compute the product of all three independent variables. In order to obtain the unique effect of a higher-order interaction term, it is necessary to include all lower-order terms first (or simultaneously) so that the interaction coefficient represents a unique effect. The regression equation used to analyse a 3-way interaction looks like this:

$$Y = b_0 + b_1(X) + b_2(Z) + b_3(W) + b_4(XZ) + b_5(XW) + b_6(ZW) + b_7(XZW)$$

If the b_7 coefficient is significant, then it is reasonable to explore further. Reframe the regression equation so that Y is a function of one of the IVs at particular values of the other two:

$$Y = (b_1 + b_4(Z) + b_5(W) + b_7(ZW))X + (b_0 + b_2(Z) + b_3(W) + b_6(ZW))$$

The simple slope (what Aiken and West, 1991 call a "simple regression equation") is now:

$$(b_1 + b_4(Z) + b_5(W) + b_7(ZW))$$

The remainder of the equation now functions as a simple intercept term.

We can represent 3-way interactions graphically in the same way as 2-way interactions. Pick convenient or meaningful values for Z and W, such as one standard deviation above and below the mean on each, and use all combinations of these values in the equation to plot lines at meaningful levels of X. We can choose any variable to use for the x-axis - it does not matter, except that it may be easier for interpretation to use one over another." Preacher (2010)

An interaction effect exists if, and only if, the three-way interaction term gives a significant contribution (Cohen and Cohen, 2003). The standard F or Chi-square tests show whether the explanatory variables in question influences the dependent variable in the overall model. In particular, these tests look at whether all the coefficients in the model are significantly different from zero. In order to

test for a directional hypothesis, increase or decrease, one has to look also at the sign of the interaction term.

Only in a simple linear-additive regression model is the coefficient of a variable and the effect on the dependent variable of a unit increase in that variable are identical. In interactive models, this equivalence between coefficient and effect no longer holds. Each variable involved in the interaction terms of interactive models has multiple effects, depending on the levels of the other variable(s) with which it interacts. This represents the substantive implication of interactive hypotheses in the first place (Kam and Franzese, 2003).

As can be seen from the simple slopes in the inset of Preacher (2010) above, those varying effects or slopes of x at particular values of z and w involve the coefficients on x , xz , xw and xzw . The coefficient on x represents just one effect x may have, namely the effect of x at $z=0$. When the variables are centred, then the coefficient on x represents the effect of x at $z = \text{mean}$. Thus, single t -tests on individual coefficients on variables involved in interactive terms require care to interpret because they refer to significance at only one empirical value of the other variables (Kam and Franzese, 2003).

Braumoeller (2004) supports the above-mentioned arguments. He suggests that because interactive relationships imply that the impact of a main explanatory variable on the dependent variable varies according to the level of a moderating explanatory variable, the idea of the impact of the main explanatory variable on the dependent variable in general is in fact a meaningless one. Thus, researchers do not focus on the significance of the regression coefficients of main explanatory variables. Instead, they examine the nature of the higher order interaction terms (Cohen and Cohen, 2003; Brambor et al., 2006). However, one should still include the main effect terms in the regression. The entry of main effects, into a multiple regression model, removes them from the interaction term (Brambor et al., 2006). This is necessary because the interaction term carries information on both the main and interaction effects (Cohen and Cohen, 2003). One thus does not require the main effects estimates to be significant (Bedeian and Mossholder, 1994).

Whilst Preacher (2010), Kim et al (2001) and Jaccard et al (1990) advise to plot the nature of the significant interactions, Kam and Franzese (2003) suggest tabulating the slopes when the plots become cluttered and difficult to view and interpret. I take their advice.

Interaction analysis must account for multicollinearity since the main and moderating explanatory variables are on their own and in the interaction terms within the same regression equation. Analysts have contested the issue of controlling for multicollinearity in interaction calculations. Whilst some advocate mean-centring (Preacher et al., 2006), others do not. Mean-centring involves calculating the mean of all observations of the explanatory variables of interest and subtracting this from the observed value. Others argue that if one calculates the marginal effect of a one-unit increase in the main explanatory variable at the same level of the moderating explanatory variable from the estimates of the centred and uncentred models, one would obtain exactly the same marginal effect and measure of uncertainty. Brambor et al (2006, p71) argue, “given that the centred and uncentred models are algebraically equivalent, we can unequivocally state that centring does not change the statistical certainty of the estimated effects and, therefore, cannot really mitigate any multicollinearity issues that exist.” To remove multicollinearity I choose instead to drop one of the collinear variables as Levie and Autio (2008) have done.

In the traditional approach to probing significant interaction effects one chooses several values of the moderating explanatory variable at which to evaluate the significance of the simple slope for the regression (Aiken et al., 1991). The significance of simple intercepts is rarely of interest. In many cases, the regression of the dependent variable on the main explanatory variable is significant at values of the moderator that are less than the lower bound and greater than the upper bound, while the regression is non-significant at values of the moderator falling within the region (Preacher et al., 2006). In the absence of theoretically meaningful values, Cohen and Cohen (2003) recommend choosing values at the mean of the moderating explanatory variable and at one standard deviation above and below the mean. I chose to apply this approach. This implies

that a choice of two or three standard deviations away from the mean might risk results were coefficients are not significantly different from zero.

Brambor et al (2006) suggest the possibility for the marginal effect of the main explanatory variable on the dependent variable to be significant for substantively relevant values of the moderating explanatory variable despite the statistical insignificance of the coefficient on the interaction term. This implies that one cannot determine whether a model should include an interaction term simply by looking at the significance of its coefficient. By dropping the interaction terms if this coefficient is insignificant, one could potentially miss important moderating relationships between their variables. The typical results table often conveys little information of interest because one is not concerned with model parameters per se. Instead, one is primarily interested in the marginal effect of the main explanatory variable on the dependent variable for substantively meaningful values of the moderating variable.

6.8.2 Model specification and estimation

The dependent variable EA corresponds to the number of registered new enterprises in the respective countries and standardised using the number of existing companies. I use heteroskedasticity-robust estimators (Wooldridge, 2002) to ensure that one interprets a significant effect as truly significant, even for different residual variances.

I use several models to test the hypotheses. Model 1 includes the informal institutional variable and ED. Model 3 extends Model 1 to include the formal institutional variable. In this way, I get to test for Hypothesis 1 by examining the significant difference in fit when progressing from Model 1 to Model 3. I included Model 2, which includes a formal institutional variable and ED, to test, relative to Model 3 again, if informal institutions also have a significant main effect on EA to confirm my choice of formal institutions as a focal explanatory variable. Models 4 to 6 each include one of the two-way interaction terms. Models 4 and 5 in particular test for Hypotheses 2 and 3 respectively. The difference in fit between Models 6 and 7, tests for hypotheses 4 and 5.

I side with Brambor et al (2006) who suggest that mean-centring does not change the statistical certainty of the estimated effects and, therefore, cannot really mitigate any multicollinearity issues that exist (see section 6.8.1). I thus form interaction terms directly from GEM data with any centring. In order to remove multicollinearity I choose to drop one of the collinear variables. It might be possible to mitigate against multicollinearity, by entering collinear terms in separate regression equations.

Table 13: Variables included in the respective models

	Mod. 1	Mod. 2	Mod. 3	Mod. 4	Mod. 5	Mod. 6	Mod. 7
ED	x	x	x	x	x	x	x
Informal	x		x	x	x	x	x
H1: Formal		x	x	x	x	x	x
H2: Formal x Informal				x		x	x
H3: Formal x ED					x	x	x
ED x Informal						x	x
H4, H5, H6: Formal x Informal x ED							x

The Hausman test determines the use of fixed-effects or random-effects in a model. This tests the significance of the correlation between the unobserved country-specific random-effects and the explanatory variables. If they do not correlate, then the random-effects model might be more powerful and parsimonious. If they correlate, the random-effects model results in inconsistent estimates and the fixed-effects model would be the model of choice. The null hypothesis for this test predicts no correlation.

Ho = country effects uncorrelated with explanatory variables (ED, informal, formal)

Table 14: Hausman test

	Fixed	Random	Difference between fixed and random	Standard error
ED	-0.615	-0.572	-0.043	0.065
Informal (ESIm)	-0.637	-0.598	-0.039	0.067
Formal (GPR)	-0.943	-0.898	-0.045	0.128
ED#Informal	0.163	0.155	0.008	0.017
ED#ED	0.238	0.227	0.010	0.030
Informal#Formal	0.239	0.233	0.006	0.032
Formal#Informal#ED	-0.060	-0.058	-0.001	0.008
<p>b = consistent under Ho and Ha; obtained from panel regression</p> <p>B = inconsistent under Ha, efficient under Ho; obtained from panel regression</p> <p>Test: Ho: difference in coefficients not systematic</p> <p>$\chi^2(7) = 3.53 \dots \dots \dots \text{Probability} > \chi^2 = 0.8321$</p>				

I chose a random-effect specification for all models. I show an output (see Table 14) for a Hausman test of the model that includes the three-way interaction between ED, entrepreneur social image and government policies and regulations. The probability value of 0.8321 indicates that the null should not be rejected i.e. there is no correlation. Typically, one chooses the random effects specification in

this instance. Note though that the Hausman statistic, 3.53, is relatively small and the coefficients are not entirely different.

Substantively, fixed-effects models examine the causes of changes within a country (Kohler and Kreuter, 2009). For example, fixed-effects will not work well with data with slow changing variables over time like that of the typical informal institutional variable like entrepreneurial attitudes. Nevertheless, I am interested in examining the variations across countries. Nielsen and Alderson (1997), suggest that fixed effects throws out cross-sectional variation in the dependent and independent variables present in the data. Halaby (2004) however argues that fixed effects merely buy protection against biased and inconsistent parameter estimates.

In random effects, the unobserved heterogeneity is mean independent of the main explanatory variables. In particular, the generalised least square (GLS) random effects model lets the variances differ across countries and controls for any unobservable country effects. This model also allows inclusion of time-invariant variables in the estimation, such as the slowly evolving informal institutions. The model also generalises to the entire population of countries. Substantively then random effects suits this research. Below, I show a general version of the random effects specification used here.

$$EA = b_0 + b_1(ED) + b_2(Formal) + b_3(Informal) + b_4(ED)(Informal) + b_5(ED)(Formal) + b_6(Formal)(Informal) + b_7(ED)(Formal)(Informal) + \alpha_i + \varepsilon_{i,t}$$

Where:

EA = cross-country entrepreneurial activity

ED = economic development

Formal = formal institution

Informal = informal institution

b_0 = estimated constant

$b_1...b_7$ = estimated coefficients

α_i , ε_{it} = error terms

The two “error” terms, α_i and ε_{it} behave somewhat differently. There is a different ε for each country at each time. On the other hand, α only varies across countries, not over time. One regards α as representing the combined effect on EA of all unobserved variables that are constant over time. On the other hand, ε represents purely random variation at each point in time. I am interested in the three-way interaction term, $b_7(ED)$ (*Formal*) (*Informal*).

6.8.3 Regression assumptions, violations and remedies

In similar panel research on EA, Levie and Autio (2008) considered multicollinearity, heteroskedasticity, and autocorrelation violations. This thesis also considers endogeneity since extant research confirms that EA influences ED.

6.8.3.1 Multicollinearity

Multicollinearity exists if two explanatory variables are highly correlated with one another. Such variables will then contain roughly the same information. Present multicollinearity then the regression model will not adequately isolate those explanatory variables that have a significant influence on the dependent variable. In addition, the resultant coefficient gives imprecise estimates. The most common solution to multicollinearity drops one of the highly correlated explanatory variables (Koop, 2008).

Advice differs on the approach to treat multicollinearity in models with interaction terms. Whilst mean-centring has been a common approach (Preacher et al., 2006; Preacher, 2010), it does little to solve the underlying problem of collinearity except for where a variable is interacted with itself to model non-linearity (Echambadi and Hess, 2007; Shieh, 2010). I choose to drop explanatory variables with bivariate correlations greater than 0.7, as Levie and Autio (2008) have done.

This thesis examines only interactions between formal and informal institutional indicators and ED, not within them. This in itself eliminates some multicollinearity

problems since mainly indicators within the same institution correlate by more than 0.7. For instance, note from Table 15 below that ECul and ECap both indicators of informal institutions correlate by 0.739. Since these indicators are never in the same model, multicollinearity is not a problem in similar cases.

Table 15: Correlations between indicators (see Table 9 for abbreviation list)

	GPR	ECap	High	Prim	Fin2	Fin1	ECul	ESIm	Knowent	lgGDPcap	start-up	
	0.3498*	0.2031*	0.0842	0.3592*	0.2746*	0.1153	0.3377*	0.2896*	-0.013	0.2849*	1	start-up
	0.4857*	0.1711*	0.0391	0.3315*	0.3300*	0.1982*	0.1617*	-0.0328	0.0747	1		lgGDPcap
	0.0672	0.3256*	-0.0362	0.1033	-0.1283	-0.1455	0.1478	-0.0165	1			knowent
	0.3992*	0.5184*	0.4404*	0.2947*	0.3138*	0.2412*	0.7452*	1				ESIm
	0.4789*	0.7396*	0.4379*	0.4299*	0.4806*	0.2502*	1					ECul
	0.4665*	0.1353	0.1648*	0.2587*	0.5561*	1						Fin1
	0.5586*	0.2300*	0.2727*	0.3304*	1							Fin2
	0.3952*	0.4937*	0.3215*	1								Prim
	0.3303*	0.3754*	1									High
	0.3655*	1										ECap
	1											GPR
												RDev
												MDyn
												MOpe

unbalanced panels. In the panel data used for this research, there are observations missing for some countries especially during the earlier years of GEM. The Durbin-Watson test is sensitive to an unbalanced panel structure. Though the literature does not suggest specific critical values for the Baltagi-Wu test, values that are 'much smaller than 2' are suggestive of the need to correct for serial autocorrelation (Kögel, 2004). The Baltagi-Wu values did not conflict with this threshold in any of the regressions. I therefore ran these regressions without controlling for autocorrelation in error terms. To illustrate, the regression model containing the three-way interaction between ED, entrepreneur social image and government policy and regulation resulted in a Baltagi-Wu LBI statistic of 1.71, a value not 'much smaller than 2'.

6.8.3.3 Endogeneity

A central regression assumption is that the explanatory variables are independent or exogenous. Endogeneity occurs when an explanatory variable is not entirely exogenous but depends on some unmodelled causes that also drive other variables in the model. These causes might include an omitted variable, unobserved heterogeneity or self-selection, and simultaneity (Wooldridge, 2002). The error term in a regression model captures the effects of these causes. Thus, researchers detect endogeneity when the explanatory variable correlates with the error term. In this research, it is likely that prior EA (the dependent variable) influences ED (the explanatory variable) a year later and beyond (Wennekers and Thurik, 1999). If we leave out this effect, we run the risk of ED being endogenous.

The regression equations that use time series data often contain lagged variables. The lag function creates variables with lags of various lengths. Econometrists (Blanchflower and Oswald, 1998) in the area of entrepreneurship have considered two ways to treat endogeneity. One may either use a set of instrumental variables associated with the endogenous explanatory variable or use a lag, in which case one uses values of the explanatory variable measured some time before the dependent variable. One typically searches the literature for instrumental variables associated only with the problem variable and not the others (Wooldridge, 2002). Alternatively, one allows the Statistics software (e.g.

Stata's GMM procedure) to choose lagged instrumental variables, especially in the case where one uses lagged dependent variables as explanatory variables.

Following Danis et al (2010) among others, I chose a distributed lag model. This model includes current and lagged values of the explanatory variables as regressors. Another option available to me was to use an autoregressive model, which contains a lagged dependent variable as an explanatory variable. This would mean that past EA helps to spur on further EA in the future. I chose instead to lag only one explanatory variable, ED, by one year. This removes endogeneity since EA does not have a counter-effect on past ED.

Two other ways to reduce endogeneity also require discussion. One can also mitigate against omitted variable bias by controlling for other explanatory sources of EA. As stated earlier, I did not use any controls beyond ED (see Section 6.6). Errors also occur from common method bias (Podsakoff et al., 2003). For instance, the same respondent evaluates characteristics related to the independent and dependent variables. In the GEM research, experts evaluated the level of EFCs while other individuals responded to questions on actual entrepreneurial efforts. To avoid common method bias, I went on to use the World Bank data on new registered companies.

Bruderl (2005) recommends the fixed effects model to mitigate against endogeneity. This works especially when the sources of endogeneity are due to time invariant effects. One could use a Hausman specification test to determine the bias in the RE-estimator. This test (see Section 6.8.2) suggests that the random effects model has no bias.

6.8.3.4 Heteroskedasticity

Heteroskedasticity exists when the variance of the error term differs across observations. For instance, there is a good chance of heteroskedasticity if the error variance for less developed countries differs from that of more developed countries.

Software packages like Stata are able to compute for heteroskedasticity-robust standard errors. Treating for heteroskedasticity often also alleviates problems to

do with outliers and non-normal distributions (Field, 2009). For any econometric analysis, Stock and Watson (2007) recommend the use of heteroskedasticity-robust standard errors. In their analysis of panel data containing EFCs, Levie and Autio (2008) also controlled for potential heteroskedasticity in error terms, arising from grouping by country, by specifying robust standard errors when running their models. Thus, I chose to run the option on Stata that controls for heteroskedasticity-robust standard errors.

I used the regression model containing three-way interaction between $\ln GDP_{cap}$, ES_{lm} and GPR to test for heteroskedasticity using a simple plot of the model predictions versus the resultant residual or errors. Figure 10 below does seem to show a slight broadening of the residual as the linear prediction increases, characteristic of heteroskedasticity. For consistency, I ran all the models to control for heteroskedasticity-robust standard errors.

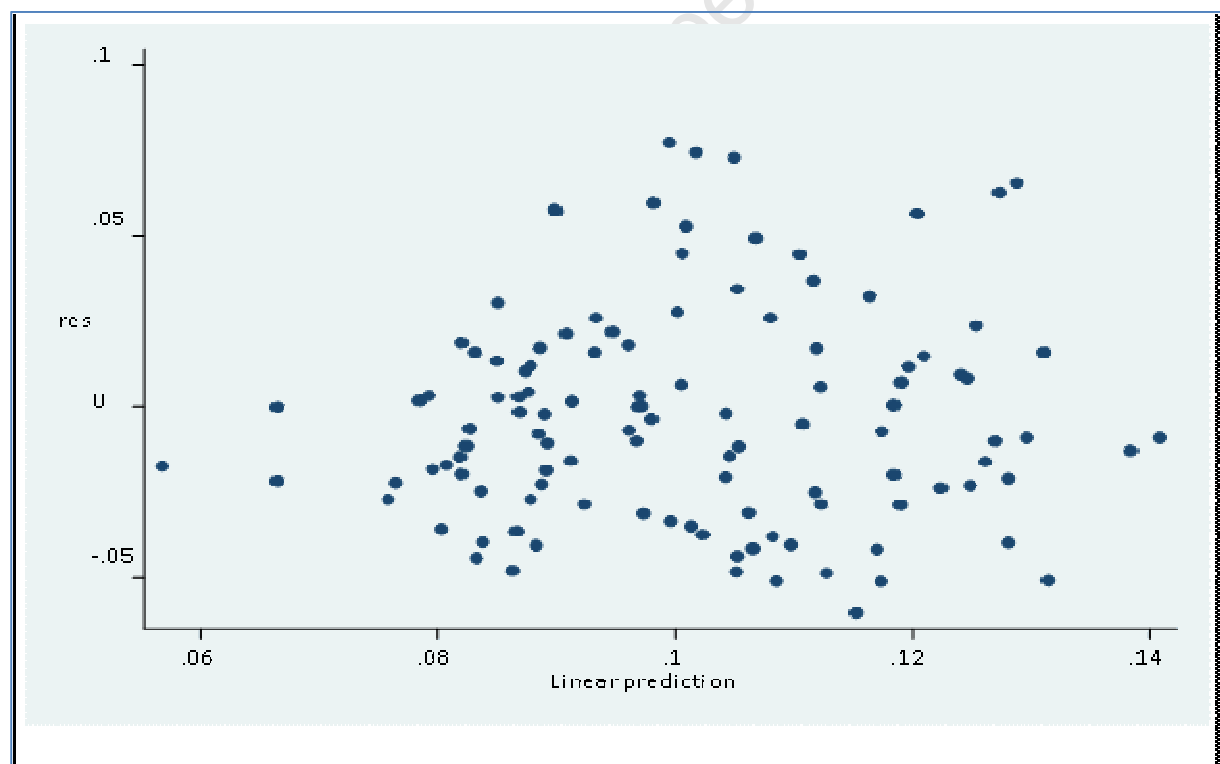


Figure 10: Visual test for heteroskedasticity showing the spread of the residuals

7. Regression results

This thesis set out to explain the variation in cross-country EA by taking both an IE and ED perspective. In particular, it set out to answer: How and why ED moderates informal institutions, which in turn moderates the formal institutions-EA relationship? It was therefore necessary to examine the simultaneous interaction between all three explanatory variables viz. formal institutions, informal institutions and ED. I thus chose a configurational approach based on a multiple regression model that includes a three-way interaction term.

I conducted an analysis of secondary panel data from the GEM expert survey as well as the WBGES and IMF databases. GEM EFCs were associated with institutional conditions. GDP per capita values from the IMF database were associated with ED. I used a measure of EA located in the formal economy, extracted from the WBGES database on new business registrations across the world.

The results of a Hausman test supported the use of a random effects specification for the multiple regression models. This specification enables the control of other heterogeneous country effects over and above the thesis's primary ED and institutional explanations of EA. Interaction analysts (Kam and Franzese, 2003; Braumoeller, 2004) advise that one focuses only on the three-way interaction term. They add that an analysis of the lower order terms will lead to misleading conclusions. Nevertheless, researchers test for the significance of change in model fit as one adds interaction terms to the model. I continue this practice here. The term of interest in this thesis after controlling for random effects is ' $b_7(ED) (Formal) (Informal)$ '.

7.1 Descriptive results

Table 15 (see Section 6.8.3.1 on Multicollinearity) shows modest correlations among formal and informal institution indicators. As expected, correlations are stronger between indicators of the same type of institution, be it formal or informal. These strong correlations do not influence the analysis since the interaction terms comprise variables representing the two different institutions viz. formal and informal

Table 16 summarises the descriptive results of the data. Appendix A describes the variables and their respective abbreviations.

Table 16: Descriptive results (see Table 9 for abbreviations)

Variable	Observations	Mean	Std. Dev.	Min	Max
start-up	176	0.100134	0.036842	0.027322	0.189918
lgGDPcap	176	4.231952	0.43699	2.666008	4.857781
Knowent	176	0.394793	0.107604	0.13	0.881
ESIm	176	3.35092	0.394509	2.474467	4.640915
ECul	176	2.807879	0.49069	1.738738	4.567466
Fin1	176	2.909364	0.467911	1.498694	4.015133
Fin2	176	2.634814	0.551445	1.40784	3.97807
Prim	176	2.098542	0.342691	1.27667	3.10359
High	176	2.81353	0.333391	1.909856	3.795492
ECap	176	2.587582	0.387949	1.684657	3.93681
GPR	176	2.507101	0.537365	1.348676	3.781669
RDev	176	2.524726	0.371698	1.72546	3.438227
MDyn	176	2.801485	0.451239	1.829775	3.945647
Mope	176	2.741934	0.338911	1.850045	3.753239

7.2 A test of the operational model

Earlier, I sought an answer to, how institutions link to conditions for EA. Informal institutions manifest as conditions for EA like SC and tacit HC (practical experience). Formal institutions manifest as conditions for EA like O&Is, FC and explicit HC (formal education). Section 4.3 shows that the definitions of formal and informal institutions have clear associations with these conditions for EA. Theoretical support thus exists. I however, use the GEM EFC data to test these empirically as conditions for EA.

I examined their direct correlation with EA (Table 15) as well as their usefulness as contingent variables by looking at whether they appear within statistically significant configurations. Some of the GEM EFCs did not lend empirical support to conditions for EA. Others lent support to each of SC, tacit HC, FC and O&I as conditions for EA (see Table 17). For instance among the explicit HC indicators of education, while Prim correlated significantly to EA, High did not. Neither Prim nor High interacted significantly with any of the indicators of informal institutions and ED. On the other hand, the tacit HC indicator, entrepreneurial capacity,

interacted significantly with indicators of formal institutions and ED. I dropped indicators not featuring in any statistically significant configurations from the following tests of the hypotheses.

Table 17: Useful indicators of institutions from GEM (see Table 9 for abbreviations)

	Formal	Informal
Indicators featuring in configurations at 1%, 5% and 10% significance levels	GPR (O&I) Mope (O&I) RDev (O&I) Fin2 (FC)	ESIm (SC) ECul (SC) ECap (Tacit HC) Know (SC)
Indicators in configurations above 10% significance level	High (explicit HC) Prim (explicit HC) Fin1 (O&I) MDyn (O&I)	

One indicator of FC featured in a statistically significant configuration viz. Fin2. This represents private equity type funding. However, Fin2 did not add any variance to EA above the informal institution indicator and ED (See Appendix 4). I thus do not discuss it below. Thus, I test formal institutions using O&Is and not FC.

While, a formal institutional indicator like R&D transfer (RDev) forms part of a significant three-way interaction term with Know and ED, it did not demonstrate any significant effect on EA directly and neither did it add any variance to EA above the other explanatory variables viz. informal institutions and ED (see Appendix 4). Since ‘knowing another entrepreneur’ (Know) formed part of the same interaction term as RDev, I do not discuss it below. With the structural SC (Know) measures not being significant, I test the effects of informal institutions through cognitive SC, which associates with attitudes towards an entrepreneurial career and orientations of risk taking and individualism.

Overall, I find that formal institutions associate with conditions for EA like O&Is. O&Is include theory-driven measures of formal institutions like the adequacy of government policy and regulations and market openness that relate significantly to EA directly and as contingent variables (see Section 4.3.3). However, the R&D measures that I also proposed earlier (see Section 6.3) do not. Similarly, the findings do not support an association between formal institutions and FC. I find that FC measures are either not significantly correlated to EA or do not appear in any significant configurations. The findings do not support an association between formal institutions and formal education measures like primary and higher education. As suggested earlier, I find support for an association between informal institutions and tacit HC as well as cognitive SC but not with structural and relational SC.

7.3 Hypothesis testing

Having reviewed the adequacy of some of the GEM measures, I now assess the conceptual model. I used hierarchical regression⁸ starting with a direct effects model, then proceeding to a model including two-way interactions and eventually to that including a three-way interaction. I added the two-way interactions separately at first to test if each interaction adds significant variance to the direct effects model. I added all two-way interactions simultaneously to test if the subsequent addition of a three-way interaction term results in any significantly difference variance in EA.

Bearing in mind the prior hypotheses on the nature of the three-way interaction (Hypotheses 4 and 5), the significance of the three-way interaction terms was important only as far as signalling that it was important to examine the particular interaction further. For the two-way interaction hypotheses (Hypotheses H2 and H3), it was only necessary to examine the sign of the interaction term. A negative sign meant that the formal institutions-EA relation decreases as either informal

⁸ These Tables contain an additional chi-square difference test to establish if the informal institutional variable adds any significant variance to EA over and above the formal institution and ED variables. Though this was not a hypothesis, I have performed this to test my underlying argument that formal institutions better serves as the main or focal explanatory variable.

institutions or ED levels increases. A simple slope analysis was necessary to examine the formal institutions-EA relationship based on contingent effects arising from country variations in informal institutions and ED levels.

I first review the results including the interaction between 'entrepreneur social image' (ESIm), 'government policy and regulations' (GPR) and ED. ESIm, associates with cognitive SC or culture, indicators of informal institutions. GPR indicates formal institutions. In the measurement model, this three-way interaction was significant at the 1% level. I then use other indicators to discuss the robustness of the above findings. The log of GDP per capita indicated ED.

Stata uses a Wald chi-square statistic to test the model fit of a random effects specification. The use of a lagged ED variable to control for endogeneity results in the number of observations dropping from 176 to 116 for all tests⁹. There were 33 groups per test. Observations per group were at an average of 3.5 varying from a minimum of 1 to a maximum of 7.

7.3.1 Entrepreneur social image, government policy and regulations and ED configuration

Model 1 (see Table 18) contains only the direct effects of informal institutions and ED. In order to test Hypothesis H1 - the higher the level of formal institutional development, the higher the level of EA - Model 3 adds the effect of formal institutions. The addition of formal institutions, consistent with the starting point of the thesis's exposition, results in a positive effect of formal institutions on EA ($\beta = .018, p < .05$). The formal institution variable also explains additional variance (chi square difference = 5.29, $p < .05$). Notice that though the informal institutional variable has a significant effect on EA ($\beta = .014, p < .05$) it does not explain any additional variance (chi square difference = 2.49, $p > .10$) above the direct effects of formal institutions and ED (Model 2). This supports the thesis's stance that formal institutions constitute the main or focal explanatory variable.

⁹ Another reason for this drop in the observations is that Stata's panel analysis does not recognise a single observation. For instance, Jamaica and Israel had only one observation – only in 2006 and 2004 respectively.

Hypothesis H2 predicts a greater positive relationship between formal institutional development and EA when informal institutions are at a high level. On the other hand, Hypothesis H3 predicts a lesser positive relationship between formal institutional development and EA for high levels of ED. To test these hypotheses, I add the individual two-way interaction terms in Models 4 and 5.

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Table 18: Random-effects GLS estimation of entrepreneurial activity against entrepreneur social image, government policy and regulations and ED

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	B	S.E.	B	S.E.	β	S.E.	B	S.E.	β	S.E.	β	S.E.
ED	0.219*	0.012	0.018	0.013	0.017	0.013	0.016	0.013	-0.042	0.039	-0.095	0.073	-0.572***	0.153
Informal	0.019***	0.007			0.014**	0.007	0.04	0.034	0.013*	0.007	-0.035	0.075	-0.598***	0.162
H1: Formal			0.021***	0.008	0.018**	0.008	0.054	0.041	-0.084	0.057	0.001	0.1	-0.898***	0.272
H2: Formal # Informal							-0.01	0.012			-0.016	0.015	0.232***	0.069
H3: Formal #ED									0.024	0.014	0.017	0.016	0.227***	0.066
Informal #ED											0.021	0.021	0.155***	0.044
H4, H5,: Formal # Informal # ED													-0.058***	0.017
Constant	-0.055	0.065	-0.029	0.055	-0.066	0.063	-0.151	0.135	0.189	0.155	0.277	0.285	2.294***	0.581
R square within	0.0696		0.136		0.159		0.161		0.213		0.23		0.289	
R square between	0.2499		0.193		0.246		0.265		0.215		0.219		0.222	
R square overall	0.1926		0.182		0.218		0.225		0.212		0.213		0.218	
Wald chi-square (df)	7.53** (2)		10.33*** (2)		12.82*** (3)		15.25*** (4)		13.02** (4)		24.31*** (6)		29.29*** (7)	
Chi-square difference (df)					5.29** (1) formal		2.43 (1)		0.2 (1)		11.49*** (3)		4.98** (1)	
Chi-square difference (df)					2.49 (1) informal									

The two-way interaction models (4 and 5) do not significantly increase the amount of explained variance ($p > .10$) above the direct effects Model 3. In addition, none of the two-way interaction terms are statistically significant ($p > .10$). Thus, the findings do not support Hypothesis H2 or Hypothesis H3. However, the inclusion of the three-way interaction term in Model 7, significantly increases explained variance over all the two-way interactions included in Model 6 (chi square difference = 4.98, $p < .05$). The effect of the configuration or three-way interaction was also significant ($\beta = -.058$, $p < .01$). This suggests a configuration of formal and informal institutions and ED.

Hypotheses H4 and H5 predict the nature of the configuration or three-way interaction. To determine the nature of an interaction one must consider jointly the main effects and the interaction terms (Cohen and Cohen, 1983). For higher-order interactions, one must consider all lower-order interactions and main effects (Aiken and West, 1991). Based on the regression coefficients of Model 7 in Table 18, I conduct a simple slope analysis (Aiken and West, 1991). Appendix 3 illustrates the calculation of the slopes that represent the effect of formal institutions on EA (Hypothesis H1). Table 19 below¹⁰ shows the slopes.

Table 19: Simple slope analysis for configuration of entrepreneur social image, government policy and regulations, and ED

		Informal institutional development	
		Low	High
ED	Low	-0.002 (.09)*	0.007 (.11)
	High	0.046 (.13)	0.015(.14)

* EA values are shown in brackets

Hypothesis H4 predicts an increase in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at low levels of

¹⁰ One can also choose to plot the slopes but the plots are somewhat cluttered and difficult to read especially for three-way interactions.

ED. Particularly relevant to test H4 are the two cells where low ED intersects with weak informal institutions (slope = $-.002$)¹¹ and strong informal institutions (slope = $.007$). Observing the two cells, one can confirm that for low levels of ED, the positive of formal institutions on EA increases as the level of informal institutional development increases. This result supports Hypothesis H4.

Hypothesis H5 predicts a decrease in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at high levels of ED. High levels of EA exists at these higher levels of ED, despite a decrease in simple slopes. Particularly relevant to test H5 are the two cells where high ED intersects with low informal institutional development (slope = $.046$) and high informal institutional development (slope = $.015$). Observing the two cells, one can confirm that for high levels of ED, the effect of formal institutions on EA decreases as informal institutional development increases. This result supports Hypothesis H5.

7.3.2 Examining the robustness of the results

7.3.2.1 Entrepreneur social image, market openness and ED configuration

I now repeat the analysis with a series of other measures that are also valid indicators of formal and informal institutions. I now indicate formal institutional development by means of 'market openness' abbreviated as Mope. This represents the extent to which the new enterprises are free to enter existing markets. As in the previous interaction, examined in Section 7.3.1, I retain the indicator of informal institutional development as ESI_m.

Table 20 shows the regression results for similar models to the prior analysis. The addition of formal institutions to Model 1 to give Model 3, results in a positive effect of formal institutions on EA ($\beta = .023$, $p < .01$). The formal institution variable also explains additional variance (chi square difference = 4.63 , $p < .05$). Again, these results lend support to Hypothesis H1. Notice, here too, that the effect of informal institutions has a significant effect on EA but it does not explain

¹¹ The slope is marginally non-positive. It shows that there is no relationship between formal institutions and EA at low levels of informal institutions and ED.

any additional variance above the direct effects of formal institutions and ED (Model 2). Again, this supports the thesis's stance that formal institutions constitute the main or focal explanatory variable.

Hypothesis H2, predicts a positive moderating effect of the informal institution variable on the formal institutions-EA relationship. I tested it by adding an interaction term to Model 3 to give Model 4. The results, like before do not support H2.

Hypothesis H3, predicts a negative moderating effect of the ED variable on the formal institutions-EA relationship. I tested it by adding an interaction term to Model 3 to give Model 5. A positive interaction between formal institutions and ED exists ($\beta = .023$, $p < .10$). However, the interactions does not add any variance (chi square difference = 1.3, $p > .10$). I conclude that these results do not lend support to H3.

Again, like the previous result that examined the entrepreneur social image, government policy and regulations and ED configuration, the inclusion of the three-way interaction term, in Model 7, significantly increases the explained variance over Model 6 (chi square difference = 4.55, $p < .05$). The effect of the configuration or three-way interaction was also significant ($\beta = -.065$, $p < .01$).

Table 20: Random-effects GLS estimation of EA against entrepreneur social image, market openness and ED

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	B	S.E.	β	S.E.	B	S.E.	B	S.E.	β	S.E.	β	S.E.
ED	0.022*	0.012	0.017	0.013	0.016	0.013	0.016	0.013	-0.047	0.044	-0.113	0.087	-0.696***	0.207
Informal	0.019***	0.007			0.016**	0.006	0.038	0.047	0.015**	0.006	-0.022	0.074	-0.751***	0.223
H1: Formal			0.025***	0.009	0.023***	0.009	0.05	0.054	-0.076	0.053	0.018	0.07	-0.938***	0.308
H2: Formal # Informal							-0.008	0.016			-0.022	0.016	0.256***	0.083
H3: Formal # ED									0.023*	0.014	0.019	0.013	0.242***	0.075
Informal # ED											0.023	0.02	0.194***	0.057
H4, H5: Formal # Informal # ED													-0.065***	0.02
Constant	-0.055	0.065	-0.04	0.058	-0.081	0.0666	-0.156	0.186	0.187	0.173	0.261	0.333	2.749***	0.815
R square within	0.07		0.125		0.151		0.15		0.185		0.205		0.234	
R square between	0.25		0.149		0.231		0.242		0.199		0.191		0.194	
R square overall	0.192		0.146		0.206		0.211		0.189		0.185		0.187	
Wald chi-square (df)	7.53** (2)		10.3*** (2)		12.16*** (3)		12.23** (4)		13.46*** (4)		18.43*** (6)		22.98*** (7)	
Chi-square difference (df)					4.63** formal		0.07		1.3		6.27*		4.55**	
Chi-square difference (df)					1.86 informal									

I use the slopes shown in Table 21 below, test Hypotheses H4 and H5.

Table 21: Simple slope analysis for configuration of entrepreneur social image, market openness, and ED

		Informal institutional development	
		Low	High
ED	Low	0.012 (.10)	0.021 (.12)
	High	0.057 (.13)	0.021 (.14)

The two cells where low ED intersects with low informal institutional development (slope = .012) and high informal institutional development (slope = .021) confirm, an increase in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at low levels of ED. This result supports Hypothesis H4.

The two cells where high ED intersects with low informal institutional development (slope = .057) and high informal institutional development (slope = .021) confirm, a decrease in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at high levels of ED. This result supports Hypothesis H5.

7.3.3 Entrepreneurial culture, government policy and regulations and ED configuration

I now take the interaction examined in Section 7.2.1, and indicate the informal institution variable by means of 'cultural and social norms' abbreviated as ECul. This measures the extent to which existing social and cultural norms encourage EA.

Table 22 shows the regression results for similar models to the prior analyses. The addition of formal institutions to Model 1 to give Model 3, results in a positive effect of formal institutions on EA ($\beta = .018$, $p < .05$). The formal institution variable also explains additional variance (chi square difference = 3.6, $p < .10$). Again, these results lend support to Hypothesis H1. When culture and norms are

considered as indicators, informal institutions has little effect on EA ($\beta = .009$, $p > .10$) but it explains additional variance (chi square difference = 2.94, $p < .10$).

The findings do not support H2. The effect size is not significant but the additional explained variance is, albeit at a 10% level. In addition, the findings do not support H3. The effect of interaction between formal institutions and ED is positive ($\beta = .024$, $p < .10$). However, no additional variance (chi square difference = -.27, $p > .10$) is added. Again, the inclusion of the three-way interaction term, in Model 7, significantly increases the explained variance over Model 6 (chi square difference = 11.52, $p < .01$). The effect of the configuration or three-way interaction was also significant ($\beta = -.032$, $p < .05$).

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Table 22: Random-effects GLS estimation of EA against entrepreneurial culture, government policy and regulations and ED

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	β	S.E.	B	S.E.	β	S.E.
ED	0.02	0.013	0.018	0.013	0.016	0.013	0.017	0.013	-0.043	0.037	0.041	0.051	-0.176*	0.096
Informal	0.014**	0.006			0.009	0.006	0.025	0.023	0.008	0.006	0.24***	0.093	-0.079	0.113
H1: Formal			0.021***	0.008	0.018**	0.008	0.036	0.028	-0.086	0.057	-0.198**	0.088	-0.613**	0.249
H2: Formal # Informal							-0.006	0.009			-0.0001	0.011	0.138**	0.065
H3: Formal # ED									0.024*	0.014	0.05***	0.018	0.146***	0.056
Informal # ED											-0.053***	0.025	0.02	0.028
H4, H5: Formal # Informal # ED													-0.032**	0.014
Constant	-0.022	0.054	-0.029	0.055	-0.038	0.055	-0.085	0.092	0.219	0.148	-0.148	0.187	0.792*	0.404
R square within	0.073		0.136		0.151		0.153		0.207		0.264		0.292	
R square between	0.208		0.193		0.221		0.23		0.187		0.23		0.224	
R square overall	0.174		0.182		0.206		0.212		0.197		0.226		0.228	
Wald chi-square (df)	9.67 *** (2)		10.33*** (2)		13.27*** (3)		16.78*** (4)		13.0*** (4)		17.92*** (6)		29.44*** (7)	
Chi-square difference (df)					3.6* (1) formal		3.51* (1)		-0.27 (1)		4.65 (3)		11.52 *** (1)	
Chi-square difference (df)					2.94* (1) informal									

Table 23 below indicates the slopes used to test for H4 and H5.

Table 23: Simple slope analysis for entrepreneurial culture, government policy and regulations and ED configuration

		Informal institutional development	
		Low	High
ED	Low	-0.0203 (.05)	-0.003 (.11)
	High	0.0426 (.13)	0.0328 (.12)

The two cells where low ED intersects with low informal institutional development (slope = -.0203) and high informal institutional development (slope = -.003) confirm, an increase in the moderating effect of informal institutional development on the formal institutions-EA relationship at low levels of ED. However, the negative slopes here do not support an overall positive effect of formal institutions on EA. This result, using the GEM indicator ECul for informal institutions, does not convince one to support Hypothesis H4.

The two cells where high ED intersects with low informal institutional development (slope = .0426) and high informal institutional development (slope = .0328) confirm, a decrease in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at high levels of ED. This result supports Hypothesis H5.

7.3.4 Entrepreneurial capacity, government policy and regulations and ED configuration

I now take the interaction examined in Section 7.2.1 and replace the informal institutional variable, 'entrepreneur social image' by means of 'entrepreneurial capacity'. This measures the extent to which people know how to start and manage a business.

Table 24 shows the regression results for similar models to the prior analyses. The addition of formal institutions to Model 1 to give Model 3, results in a positive effect of formal institutions on EA ($\beta = .017$, $p < .05$). The formal institution

variable also explains additional variance (chi square difference = 2.8, $p < .10$). Again, these results lend support to Hypothesis H1. Upon using entrepreneurial capacity as an indicator, informal institutions effect EA positively ($\beta = .016$, $p < .05$) but explains no additional variance (chi square difference = 2.41, $p > .10$).

These results do not lend support to H2. The results show an effect size that is not significant and no additional explained variance. In addition, the results do not support H3. Here too, the results show an effect size that is not significant and no additional explained variance. The inclusion of the three-way interaction term, in Model 7, significantly increases the explained variance over Model 6 (chi square difference = 6.69, $p < .01$). The effect of the configuration or three-way interaction was also significant ($\beta = -.041$, $p < .10$).

Table 24: Random-effects GLS estimation of EA against entrepreneurial capacity, government policy and regulations and ED

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	β	S.E.	B	S.E.	B	S.E.	B	S.E.	β	S.E.	β	S.E.	β	S.E.
ED	0.015	0.012	0.018	0.013	0.013	0.012	0.013	0.012	-0.033	0.034	-0.025	0.084	-0.28*	0.146
Informal	0.023***	0.009			0.017**	0.007	0.028	0.031	0.014**	0.007	0.059	0.116	-0.353	0.217
H1: Formal			0.021***	0.008	0.016**	0.007	0.026	0.027	-0.065	0.049	-0.064	0.077	-0.557*	0.327
H2: Formal # Informal							-0.004	0.011			-0.007	0.017	0.176	0.112
H3: Formal # ED									0.019	0.012	0.023*	0.013	0.135*	0.071
Informal # ED											-0.006	0.034	0.088*	0.051
H4, H5: Formal # Informal # ED													-0.041*	0.024
Constant	-0.021	0.052	-0.029	0.055	-0.038	0.052	-0.068	0.101	0.165	0.135	0.082	0.281	1.194*	0.62
R square within	0.153		0.136		0.201		0.201		0.234		0.238		0.263	
R square between	0.139		0.193		0.196		0.201		0.172		0.179		0.187	
R square overall	0.1		0.182		0.175		0.178		0.171		0.18		0.193	
Wald chi-square (df)	9.94*** (2)		10.33*** (2)		12.74*** (3)		13.23*** (4)		12.56** (4)		14.44** (6)		21.13*** (7)	
Chi-square difference (df)					2.8* (1) formal		0.49 (1)		-0.18 (1)		1.7 (3)		6.69*** (1)	
Chi-square difference (df)					2.41 (1) informal									

I use the she slopes shown in Table 25 below to test Hypotheses H4 and H5.

Table 25: Simple slope analysis for configuration of entrepreneurial capacity, government policy and regulations and ED

		Informal institutional development	
		Low	High
ED	Low	-0.001 (.08)	0.014 (.10)
	High	0.037 (.13)	0.025 (.14)

The two cells where low ED intersects with low informal institutional development (slope = -.001) and high informal institutional development (slope = .014) confirm, an increase in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at low levels of ED. This result supports Hypothesis H4.

The two cells where high ED intersects with low informal institutional development (slope = .037) and high informal institutional development (slope = .025) confirm, a decrease in the positive moderating effect of informal institutional development on the formal institutions-EA relationship at high levels of ED. This result supports Hypothesis H5.

8. Discussion and conclusions

There is yet more to understand about the underlying causes of the cross-country variance in EA (Levie and Autio, 2011). Plans to increase EA have become an important element of country strategies for economic restructuring. However, transaction problems prevail because of uncertainty and information asymmetry (Li and Zahra, 2011; De Clercq et al, 2011b; Welter, 2011). Policymakers seeking to encourage EA must devise ways to help entrepreneurs overcome such uncertainty and information asymmetry. Both formal and informal institutions provide the proper incentives to help reduce such problems. Consequently, the thesis roots its theoretical perspective of institutions in institutional economics (North, 1990).

This thesis suggests that a country's formal institutions affect its EA. The more developed these institutions, the more they reduce information asymmetry and uncertainty to incentivise EA. Further, it proposes that informal incentives moderate the formal institutions-EA relationship. In turn, the differences in the availability of opportunities through differences in ED levels moderate the effect of culture. Informal constraints considered included the local society's attitudes towards an entrepreneurial profession as well as their orientation towards risk taking and individualism. A collectivist attitude restricts the development of formal institutions and limits EA to those with social ties from an existing network. As a result, other potential entrepreneurs excluded from joining the network might not get an opportunity to start an enterprise. In particular, I develop and test the following hypotheses:

- H1: The higher the level of formal institutional development, the higher the level of EA
- H2: The higher the level of informal institutional development, the greater the positive relationship between the level of formal institutional development and the level of EA
- H3: The higher the level of ED, the lesser the positive relationship between the level of formal institutional development and the level of EA

- H4: At lower levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship increases
- H5: At higher levels of ED, the positive moderating effect that informal institutional development has on the formal institutions-EA relationship decreases

I construct a panel dataset based on the GEM and World Bank Group Entrepreneurship Surveys and the IMF database for up to 45 countries over the 2000–2007 periods. I test the hypotheses by means of a random effects generalised least squares model in a hierarchical multiple regression procedure. This procedure tests the significance in the variance of cross-country EA when adding two-way and three-way interaction terms. While contingency approach refers to the examination of two-way interaction, a configurational approach refers to the examination of three-way interactions (Wiklund and Shepard, 2005). The regressors included not only explanatory variables themselves but also multiples of explanatory variables. One commonly tests moderating or interaction effects, by multiplying the explanatory variables with a conditional effect on one another.

In the process of developing the theoretical framework, I also sought to develop an operational framework that links institutions to the conditions for EA. This operational framework suggests that formal institutions associate with O&Is, FC and explicit HC or education. In addition, informal institutions associate with SC and tacit HC like practical experience. A number of indicators in the GEM expert survey confirm the adequacy of this framework (see Section 7.2).

8.1 Discussion of results

While the GEM EFC on policies and regulations featured as a useful indicator of O&Is, the GEM EFC on the social image of the entrepreneur served as an indicator of cognitive SC. While formal institutions tend to influence O&Is, informal institutions tend to influence cognitive SC (See Section 4.3). Cognitive SC has a stronger association with EA than structural or relational SC. Relational SC conditions manifest in trust (Knack and Keefer, 1997). On the other hand,

cognitive SC relates to a particular cultural context, for example the culture of risk taking and individualism (Thomas and Mueller, 2000). I measured cognitive SC using GEM EFCs such as societal attitudes towards entrepreneurship and cultural norms and values such as individualism and risk-taking. Except for De Clercq et al (2011) and Pinillos and Reyes' (2011) work on culture and EA, extant research predominantly relies on social network arguments of informal influences on country level EA. Such SC measures only depict the structure of social relations (Arenius and De Clercq, 2005; Anderson et al, 1994).

Though the cognitive dimension has not been discussed in the mainstream literature on SC (Liao and Welsch, 2003), it has the potential to encapsulate all dimensions of SC. Thus, one might be able to extend arguments based on observations of cognitive SC to arguments around structural and relational SC. Without physical centrality or networks (structural SC), entrepreneurs would be less likely to develop trustful relationships (relational SC), subsequently hampering the formation of a culture of shared beliefs (cognitive SC). Alternatively, an entrepreneurial network with shared beliefs will more likely develop trusting relationships among the entrepreneurs and between the entrepreneurs and other actors in the network (Liao and Welsch, 2003).

The use of policies and regulations and culture to represent formal and informal institutions respectively resulted in empirical support for all of the hypotheses except H2 and H3. Hypotheses H2 and H3 predict the explanatory potential of EA through two-way interactions between formal institutions and informal institutions as well as between formal institutions and ED. Countries with higher levels of formal institutional development contain higher levels of EA (H1). Positive attitudes towards an entrepreneurial profession as well as a high orientation towards risk taking and individualism increases the effect of formal institutions such as policies and regulations on EA. This increase in the effect of formal institutions predominates among less developed countries (H4) than developed countries (H5). The results show that both formal and informal institutions contribute to EA, and suggest that the same formal institutions used in different societies and at different levels of ED can yield different EA outcomes.

While a contingency approach (two-way interactions) does not provide additional information over and above a main-effects-only model, a configuration (three-way interaction) of formal and informal institutions and ED does. The added role of an informal institution such as culture appears insignificant (H2). In line with findings by Pinillos and Reyes (2011), the effect of culture only becomes significant when considering it in the light of a country's level of ED. Even the added effect of ED on the formal institutions-EA relations is not significant (H3) without considering the effect of culture. Implications are that insights into EA does not reach consistently high levels across all countries despite their efforts at formal institutional reforms can be gained through the concomitant study of the effects of informal institutions and ED.

When formal institutions help reduce transaction costs they incentivise EA. Thus, the debottlenecking of political, economic and contractual constraints is important because transaction costs influence economic exchange in a significant way (North, 1990). For instance, the allocation of cash flow and control rights depend on the institutions that underpin the adequacy of property rights in incentivising entrepreneurs to start businesses (Alvarez et al, 2008). Another circumstance, information asymmetry hinders EA (Cohen and Winn, 2007), since it leads to incomplete information and an increase in search costs. Such circumstances make it costly to evaluate opportunities. They also make it costly to monitor and enforce contracts and to protect the property rights of the entrepreneurs involved.

While formal institutions structure economic exchange under conditions of high costs and incomplete information, longstanding attitudes and cultural orientations provide continuity and reduce uncertainty (Li and Zahra, 2011; North, 1990). While formal institutions can undergo deliberate reform, culturally-based informal constraints tend to resist reforms. This thesis's findings imply that formal institutional reforms will not succeed in adequately incentivising individuals to start businesses while prevailing informal institutions continue to contribute towards uncertainty.

An individualistic cultural orientation that motivates personal achievement helps formal institutions to incentivise EA better (McGrath et al., 1992). Such an

orientation enables more contract-based, arms-length market transactions (Tiessen, 1997).

On the other hand, this thesis suggests that high levels of collectivism (low-levels of individualism) will tend to reduce the effect of formal institutional reforms on EA. High levels of collectivism tend to rely more on informal connections to help with transactions (Gould, 1993). Contract-based, arms-length market transactions in collectivist societies might signal lack of trust and even conflict (Steensma et al., 2000a). Those who wish to avoid such conflict will tend not to start businesses even though they have the desire and the skills to do so. In addition, transactions influenced by informal relationships can be difficult to maintain in a cost effective manner, hindering further transactions (Peng, 2003).

This thesis's results lend support to the preceding arguments only under an additional condition of ED. They suggest that a culture of individualism and risk taking enhances the effect of policy and regulatory reforms on EA more sharply among less developed than developed countries. The effects of societal attitudes and cultural orientations tend to depend on the nature of opportunities that arise from ED considerations such as the predominant economic structure whether agriculturally, manufacturing or services based.

These results support arguments that formal institutional development affects EA particularly among less developed countries (Haggard et al, 2008). Thus, improvements in formal institutions have a greater impact on EA at the factor-driven and efficiency driven stages of ED. Low opportunity EA exists among less developed countries. Balamoune-Lutz (2007) showed that the initial conditions matter such that institutional reform affects EA positively at low levels of EA and negatively at high levels. Further support for the enhanced effect of policy and regulatory reforms on EA among less-developed countries arises from the non-linear S-shaped trend across the entire spectrum of ED levels (Acs and Szerb, 2009). EA rises steeply among less developed countries and plateaus among more advanced countries.

Generally, the regulatory context protects large incumbents' market shares in developed countries (Desai et al, 2003). Generally, direct government activism

favours large established corporations. Högfeldt (2004) describes in detail how Sweden's social democratic governments forged de facto partnerships with large established corporate groups, essentially offering protection from competitors in return for cooperation in implementing new social policies. They argue that politicians quite understandably find dealing with the controlling owners of a few large corporate groups simpler and more predictable than dealing with the managers of many smaller independent firms.

The low ED levels characteristic of less developed countries are marked by a shift from factor-driven to more efficiency and innovation-driven type economic activity (Lopez-Claros et al, 2007). Among efficiency-driven economies, service activities begin to increase. This results in a sharp increase in entrepreneurial opportunities. As discussed before (see Section 5.2.4) the supply chain extends from a low base of agricultural type opportunities to include both manufacturing and service opportunities (Ciccone and Matsuyama, 1996). Service opportunities in particular have low start-up costs and will tend to increase EA significantly. These service type businesses arise from manufacturing businesses focusing on their core operations and relying on outsourced support services. In this context of low ED and increasing entrepreneurial opportunity, formal institutional reforms have a high impact on EA on condition that the societal attitudes towards EA are positive.

Rodrik et al (2004) show how reforms in formal institutions among less developed Eastern European economies gave rise to increased investments and increased opportunities for potential entrepreneurs. In another case of low levels of ED, Botswana in Africa, local customs boosted the positive effects of formal institutional reforms on EA. Acemoglu et al (2002) show how the norms and values of the Tswana people supported EA and how years of British rule reinforced these.

Boettke et al (2008) compare the privatisation efforts in Poland to that of Russia. The tolerance of a small but legitimate number of private businesses during Poland's communist reign helped facilitate its transition to a market-economy. Before the collapse of communism, Poland also passed the 1988 Law on Economic Activity, which granted every Polish citizen the right to engage in

private business. Although these private firms were not a dominant part of Poland's economy during the communist period, it became easier for both the populace and politicians to build on this underlying culture of private enterprise. There was nothing, however, comparable in the Soviet Union. There, an elite became wealthy by taking over control of state assets.

Among countries at a higher level of ED, high-quality economic, political, and legal institutions are prevalent (Sobel, 2008). There tends to be more reliable tax systems, more predictable and consistent laws, better established legal enforcement mechanisms, and less administrative red tape (Manolova et al, 2008; Puffer et al., 2010). At these high levels of ED, there exists already an existing culture of positive attitudes towards EA (Pinillos and Reyes, 2011; Shane, 1992). These high levels of ED also correspond to higher trust societies (Williamson, 2011).

High ED levels are marked by shifts in economic activity characteristic of innovation-challengers, innovation-followers and innovation-leaders (Acs and Szerb, 2009). High levels of HC as well as the services nature of the economy with related low barriers to entry associated with the low set-up costs of service type companies, results in higher EA among these innovation-driven economies than that within factor and efficiency-driven ones. Though opportunities continue to be high, EA increases less steeply. Increased competition exists among the many enterprises. This high competition slows down the entry of further enterprises into the market.

8.2 Theoretical contribution

Nuanced explanations of differences in cross-country EA are still forthcoming (Levie and Autio, 2010). The current explanations of cross-country EA (Klapper et al, 2006; Djankov et al, 2002; Aidis et al, 2012; De Clercq et al, 2011b; Levie and Autio, 2010; Lim et al, 2010; Kreiser et al, 2010; Acs and Szerb, 2009) have tended to omit either one of formal institutions, informal institutions, or ED in their models. In other words, they have not fully explained country level differences in EA based on all three variables: formal institutions, informal institutions, and ED. Moreover, the complex causality and nonlinear relationships between formal and

informal institutions under different ED contexts remains underdeveloped in the literature. Klapper et al (2006) and Djankov et al (2002) recognise the simple causal effect of formal institutions on EA. I go on to extend their work to include explanations of how this effect varies among different societal and ED settings. More broadly, I contribute to efforts at integrating the fields of economics and management to explain EA. Naudé (2010) notes that one should explain EA based on institutions to further such efforts.

A configurational approach enabled me to put forth more nuanced explanations of cross-country EA. Instead of explaining how some institutions are better at explaining EA than others are, I could show how they combine to affect EA. Thus, rather than explain EA through singular causation and linear relationships, I could now assume complex causality and nonlinear relationships allowing for possible explanations where institutions complement one another in one context and compensate one another in another. When I introduce ED into the model, I find both compensating and complementary effects within similar contexts.

For instance, support for this thesis's configurational hypotheses suggests that for low ED contexts, formal institutional reforms have a greater effect on EA when informal institutions develop. This effect decreases for high ED contexts. This suggests that informal institutional development complements formal institutional reforms at low levels of ED. At higher levels of ED, informal institutions compensate for formal institutions. In a sense, stronger formal institutions have a maximum threshold when informal institutions and the economy are developed. One need not develop formal institutions beyond this threshold for high levels of both informal institutions and ED.

In order to explain these trends one has to consider the underlying incentives and opportunities, as the individual perceives them. Earlier I argued that institutions influence the incentives while ED influences the opportunities. I based this on assumptions that opportunities are independent of the individual's incentives (Shane and Venkatraman, 2000). The need for institutions to complement one another at lower levels of ED suggests that these aligned incentives are compensating for the low levels of opportunities. Institutions need not align when opportunities are prevalent (high ED). Societal incentives among developed

countries can compensate for state-driven incentives. One should not interpret this to mean that countries can get by with weak state-driven incentives but rather that they do not require strengthening beyond a certain threshold once informal institutions develop. In any case, developed countries are unlikely to contain weak formal institutions (Acemoglu et al, 2004/5).

At lower levels of ED, it seems that opportunities relate to individual incentives. Individual incentives compensate for lower levels of opportunities within such contexts. It might be that individuals perceive incentives as opportunities. This lends support to theories that opportunities are not waiting to be found (Ardichvili et al. 2003) and like incentives, they arise within an individual. Opportunities are “enacted” based on the entrepreneur’s perception, interpretation, and understanding of environmental forces rather than simply discovered (Dutta and Crossan, 2005; Gartner 1985). Moreover, this thesis indicates that the creation perspective of opportunities (Aldrich & Ruef, 2006) can explain increases in EA at lower levels of ED where independent discovery type opportunities (Shane, 2003) are scarce. The discovery perspective of opportunities adopts the assumption that opportunities form through exogenous shocks to pre-existing industries, to be exploited by unusually alert individuals or firms (Kirzner, 1989; Shane, 2003). The creation perspective of opportunities adopts the assumption that entrepreneurs themselves through an enactment process (Aldrich & Ruef, 2006) form opportunities endogenously.

Because of the complex interdependencies between EA, ED and institutions, current literature has not articulated the direction of these effects. This thesis proposes one possible explanation of the direction of the effects of institutions and ED on EA. Unlike extant literature, I consider ED as a key explanatory variable of EA rather than an outcome. Boettke and Coyne (2003) support this by suggesting that ED gives rise to EA, proposing like Baumol (1990) that the adoption and development of institutions encourage EA. Overall, I acknowledge further nuances that require investigation because of such complex interdependencies between these variables.

Related to the issue of directionality, I also question whether opportunities or incentives ought to come first when explaining variations in EA. I tested the

possibility of incentives coming first. The individual entrepreneur initiates the exploitation of an opportunity. I therefore place incentives before opportunities. Since the expected profit opportunities accruing from entrepreneurship are the result of knowledge not commercialised by the incumbent firms, the magnitude of new knowledge shapes opportunities but the commercialisation capabilities of incumbent firms constrains them (Acs et al, 2009). In this process of opportunity existence and the perception of opportunities, it seems then that one can rely on the concept of incentives to explain the perception of opportunities as sources of profit.

The above argument assumes that opportunities are real and independent of the entrepreneurs that perceive them (Shane, 2003). Opportunities are objective but the perception of opportunities is subjective (Hayek, 1937). Knight (1921) expressed the same idea in somewhat different language when he introduced his distinction between objective risk and subjective uncertainty and identified uncertainty-bearing as the economic function of the entrepreneur. However, my discussion on the creation perspective of opportunities explains how EA still increases in low opportunity contexts also indicates that this directionality issue requires further probing. The institutional approach views economics as a theory of choice subject to constraints. In addition to modifying the rationality postulate of neoclassical economics, it adds institutions as a critical constraint and analyses the role of transaction costs as the connection between institutions and costs of production. It extends economic theory by incorporating ideas and ideologies into the analysis, modelling the political process as a critical factor in the performance of economies, as the source of the diverse performance of economies, and as the explanation for inefficient markets. While neoclassical economics takes for granted the existence of enterprises, and focuses on how they interact in markets, it does not adequately explain the creation of these enterprises. The neoclassical result of efficient markets only obtains when it is costless to transact. Institutions, however, matter when it is costly to transact (North, 1990).

Economic theories based on mature and highly developed economies prove inadequate guides for developing countries, for they implicitly assume similar

institutional constraints. Which institutional factors most significantly affect entrepreneurship depend on an economy's stages of ED. For example, state-of-the-art accounting disclosure rules are of little use in an economy with a majority illiterate population and corrupt judges. EA in developing countries often entails an individual setting up a small business to earn a living. At this stage, the state can promote EA by offering entrepreneurs secure ownership of their businesses, legal enforcement of business contracts they enter, basic communication and transportation infrastructure, and an educated population from which to hire. This can stimulate economic growth, as small business owners and employees develop business skills and the broader society comes to appreciate their achievements. Individuals who succeed in these endeavours save from their earnings and invest further in the human capital of their children, in their own businesses or more broadly. This creates opportunities for developing a financial system, which extends entrepreneurial career opportunities to people lacking personal or family wealth. This sows the seed for the next stage of ED and for more intense EA. Accounting disclosure standards, bank regulation, and corporate governance now take prominence as entrepreneurs' needs for large-scale capital grow (Fogel et al, 2006).

Moreover, arguments on the effects of formal institutional reforms on EA cannot apply universally without the concomitant consideration of both informal institutions and ED. Staw (1995) suggests that a strong theoretical argument should demonstrate when effects intensify or weaken. One can then place much greater confidence in the theory. He goes on to observe that too often, moderating variables are isolated in an atheoretical manner, providing empirical limits to a finding rather than offering any insight on the theoretical mechanism itself.

Though acknowledged in part within the theoretical literature, often by simple two-way interactions or contingency effects, little empirical research has documented the simultaneous interaction of all of the three variables in formal and informal institutions and ED. This thesis consolidates several arguments based two-way interactions (Pinillos and Reyes, 2011; Danis et al, 2010; Williamson, 2009; Boettke et al, 2008). For example, it extends arguments that

the effect of informal institutions on EA depends on the level of ED (Pinillos and Reyes, 2011). It also extends arguments that formal institutions influence EA more among less developed than developed countries (Haggard et al, 2008). Further, it supports research (Acs and Szerb, 2009) suggesting that cross-country opportunity EA follows a non-linear S-shaped trend across the entire spectrum of ED levels - EA is increasing but non-linear. Overall, a configurational approach leads to a theory that can generalise to a wider range of institutional and economic contexts.

The thesis also contributes methodologically. It demonstrates the usefulness of the configurational approach in extending an understanding of why there are differences in the effects of formal institutional reforms on country level EA. This approach can account for the simultaneous effects of cultural and economic contexts on policy and regulatory reforms. In addition, the thesis's suggests a framework to relate institutions to conditions for EA. This framework has the promise of contributing to future theoretical development around the nexus of institutions, ED and EA. I suggest that formal institutions associate with conditions for EA such as O&Is, FC and explicit HC or education. In addition, informal institutions associate with SC and tacit HC like practical experience. I also locate a number of indicators in the GEM expert survey to test emerging arguments.

This thesis also demonstrates the usefulness of going beyond structural SC measures like social ties and networks to use instead measures of cognitive SC like the local society's attitude towards the entrepreneur as well as their cultural and social norms. Liao and Welsch (2003) found a strong association between cognitive SC and technology-based entrepreneurs while structural SC was associated more strongly to non-technology-based entrepreneurs. Informal institutions indicated by cognitive SC ought to increase the validity of findings since technology contributes significantly to ED.

The thesis confirms prior research that individual freedom and EA go hand-in-hand. It thus supports the use of generalised trust or trust in strangers as a means to measure informal institutions. This type of trust harmonises with the market processes prevalent in individualistically oriented societies (Williamson,

2011). Conceptually, this type of trust should be beneficial to a country's economic performance. While at face value one expects increasing trust to be in harmony with collectivist societies, their hierarchical nature (Tabellini, 2010) and close relationships restricted to within-group associations actually limits trust (Olson, 1982). In countries with low levels of trust, people will transact more with close friends and relatives, as in collectivist societies, than with strangers.

8.3 Practical contribution

Those countries pursuing high EA levels need to devise ways to reduce the transaction problems associated with uncertainty and information asymmetry. Implications are that policy and regulatory reforms to reduce the transaction problems associated with EA cannot apply universally without the concomitant consideration of both informal institutions and economic structure. Policymakers wishing to craft formal incentives for EA based on successes among exemplar countries need to design for differences in the cultural and economic contexts in the respective countries. They can only expect high increases in EA when they make simultaneous efforts at influencing the populace's cultural values and norms that favour free enterprise. Moreover, policymakers and politicians among less developed countries must have some affinity for the norms and values sympathetic to free enterprise.

Though the malleability of informal institutions such as cultural values and norms are in dispute, targeting change might begin with educational investments (Autio, 2009) and practical experience (Boettke et al, 2008)¹². Until these are in place, reformers must realise that efforts to impose institutions, whether internally or externally-driven, will fail. Reformers could start with designing the educational system to infuse students with entrepreneurial attitudes, and to provide encouraging role models. Those with tertiary education generally face the magnitude of opportunity costs that motivate one to target high growth EA. Thus, policymakers should prioritise the teaching of entrepreneurial attitudes in higher

¹² Niall Fergusen (2011) suggests that the spread of religion is also able to influence informal institutions such as culture. He describes the impact of the protestant work ethic on the economic success of several Western nations.

educational institutions. Autio (2009) also suggest secondment schemes to enable managers and academics to take a temporary leave of absence to pursue an entrepreneurial idea. Policymakers could also encourage informal institutional mechanisms that promote experience sharing between successful high-growth entrepreneurs and aspiring ones. Such efforts ought to bear fruits over the long term. Consequently, in the short term, there exists a modest influence of government policies on EA. In the long term, policies may have a greater impact.

Alternatively, policymakers need to identify particular indigenous traditions that are in synergy with property rights, trade, and individual liberty (Boettke et al, 2008)¹³ that their policies can piggyback. Institutions indigenously introduced but exogenous to the local culture are more successful than those that are exogenous through its source and its culture. For example, reforms imposed by organisations like the World Bank that are also not in tune with local culture will not work unless either the local government or the local populace share some values that underpin such reforms.

In yet another perspective, Pinillos and Reyes (2011) suggest that in very low ED contexts where the collective spirit prevails, policy measures should rather take cognisance of this need for affiliation by promoting EA through cooperatives. For more developed countries, the emphasis should continue to be on the satisfaction of other needs such as self-realisation and personal achievement.

Policymakers ought to formulate realistic policies that consider their country's economic structure (Wennekers et al, 2005). They must assess whether their economic structure is mainly factor, efficiency, or innovation driven (Acs et al, 2008a). Often factor-driven countries have high unemployment levels accompanied by a large skills deficit. Policymakers should therefore have a staggered approach to influencing their economic structure and the

¹³ In South Africa, we observe the effects of civil servant's poor attitudes towards business and entrepreneurs in the late payments to entrepreneurs for services rendered. Many small businesses in South Africa fail because they are not paid within the promised 15 to 30 day payment cycle for services rendered by them to the SA government (Fatoki and Van Aardt-Smit, 2011).

accompanying entrepreneurial opportunities. Therefore, in the case of factor-driven economies it might be wise to target labour intensive manufacturing enterprises somewhat characteristic of an efficiency-driven economic structure. Though targeting innovation-driven activities will bring economic benefits it absorbs a limited number of highly skilled entrepreneurs. Policymakers ought to be wary of ambitious targeting of innovation-driven activities at the expense of relatively less skilled efficiency-driven activities. Overall, policymakers' efforts must consider their local context.

Factor-driven economies with reasonable institutions and reasonable policies might easily achieve high growth up to semi-industrialisation (Rodrik, 2002). However, the institutional requirements of reigniting growth in an efficiency-driven economy can be significantly more demanding. Policymakers within low-income countries that have a relatively strong base of cultural norms and values in support of EA will do well to reform their policies and regulations. On the other hand, policymakers will have trouble in low-income countries with a history of negative attitudes or unsupportive norms and values towards entrepreneurship. Policymakers within efficiency-driven economies might do well to strengthen their institutions further through entrepreneurship promotion, education programmes and other such efforts (see for example Lundström and Stevenson (2005) and Hoffmann (2007)).

Considerations of formal policies that directly incentivise entrepreneurs together with other policies to do with say education means that a singular government department cannot influence EA in an isolated manner. The framework used in this thesis confirms the multidisciplinary nature of entrepreneurship even at a macro level. The multidisciplinary nature of entrepreneurship calls for the requisite multidisciplinary policy approach. Thus, the design of government operations should prioritise the alignment of diverse government departments to the national goal of entrepreneurship development.

8.4 Limitations and future research

One cannot adequately cover all of the nuances of vast topics such as EA, institutions and ED. Nonetheless, this thesis has sought to provide some basic

insights into their contingent effects, which the majority of researchers have steered clear off until recently.

The small number of less developed country observations limits this thesis. This might be cause for explicit HC (education) and FC conditions of EA not featuring in any statistically significant configurations. Higher variance makes it easier to detect relationships. For example, a higher variance in education level occurs among less developed countries than developed countries. Thus, the relationship between education and EA increases among less developed than in developed countries (Unger et al, 2011).

While the quantitative approach used in this thesis has value in confirming the expected trends in the interactions between institutions and ED, a qualitative approach will delve deeper and explore more fully, why these trends occur. A multiple case study approach (Eisenhardt, 1989) ought to provide more insights into the nuances of the interactions emerging from this study. Future research should thus consider case studies of country groupings that correspond to some of the thesis's findings.

Researchers have not exhausted models of the interplay between institutions, ED and EA. For example, entrepreneurs do influence institutional change. Progress into higher levels ED also introduce new challenges, which if managed requires further institutional changes (Chang, 2010). Substitution effects also exist within either of formal or informal institutions. This requires careful modelling. However, one should balance this against the need for a parsimonious model. Future research could apply structural equation modelling to analyse for a more comprehensive range of interplay and endogeneity.

This thesis assumes that legally registered enterprises associate more closely with opportunity than necessity-driven EA. Levie and Autio (2011) suggest that entrepreneurs aspiring towards high-growth operations will register their businesses. Necessity or survival does not drive such entrepreneurs. Consequently, I used annual WBGES data on new and formally registered enterprises. Whilst GEM measures the potential for EA, the World Bank measures actual entrepreneurship albeit at a formal level (Acs et al., 2008b). It

might well be that a portion of formal enterprises, albeit going through the efforts of a registration process, have origins steeped in survival or necessity. For example, professional people nowadays go through retrenchments. Recent experiences in the banking sector bear this out. Future research could replicate this research using specific GEM opportunity-driven EA data.

Examinations of interactions also involve establishing regions of significance. In some cases, the dependent variable regresses significantly on the main explanatory variable at values of the moderator less than the lower bound and greater than the upper bound, while it regresses non-significantly at values of the moderator falling within the region (Preacher et al., 2006). In the absence of theoretically meaningful values, Cohen and Cohen (2003) recommend choosing values at the mean of the moderating explanatory variable and at one standard deviation above and below the mean. I chose to apply this approach. Future researchers should consider establishing the regions of significance using more advanced calculation procedures.

This research has not considered a number of control variables arguing that the random effects estimator has accounted for these and that the most commonly used control for cross-country studies, GDP, is an explanatory variable in this thesis. Other controls might be appropriate. For example, as potential entrepreneurs age they become risk averse and the rate of EA might decrease. Future research might consider controlling for average age to account for the aging population among advanced economies (Acs and Szerb, 2009). Future research might explore other examples of controls such as unemployment, female entrepreneurship participation, an in-depth sector distribution, population growth, land size, economic cycles, period in democracy and wealth disparity. Finally, this thesis has not used the GEM EFC measure on intellectual property rights. This EFC would have made a useful indicator of formal institutions. Future researchers might consider using this GEM EFC.

This thesis has not operationalized arguments on the increasing role of intrapreneurship in the context of ED and institutions. I suspect that increasing intrapreneurship among advanced economies contributes to the observed decline in the rate of EA (Acs and Szerb, 2009). Future research might consider including

a variable indicating innovation and entrepreneurship within existing businesses as Bosma et al (2010) have recently done. Since two dependent variables will come into play - entrepreneurship and intrapreneurship - this might involve a type of Manova technique or perhaps a SEM approach.

Lastly, the analysis has been restricted to country-level data. Even though the process proposed by the model appears to work at the population level, different patterns might occur when using longitudinal individual-level data. The GEM EFC data are based on impressions of experts, rather than “hard” data (Levie and Autio, 2008). For example, experts might have an ideal of entrepreneurs based on several values and attitudes, but those values may not be determinants of EA in some regions (Alvarez et al., 2011). For this reason, it might be that though some of the GEM EFCs did not lend empirical support to conditions for EA, others like the World Bank’s Doing Business data might do. Researchers should replicate this work with other datasets. Alternatively, future research might consider multilevel methods that analyse for both individual and country level responses. Recent work by De Clercq et al (2011b) and Acs and Autio (2010) provide exemplars of multilevel methods applied to entrepreneurship research.

8.5 Conclusions

The effectiveness of higher levels of formal institutions on EA depends on their surrounding cultural and economic context. Countries with higher levels of formal institutions tend to have higher levels of EA within contexts of increasing cultural orientation towards risk taking and individual freedom within the local society. Formal institutions affect EA more among less developed than developed countries.

Policymakers wishing to adopt formal institutions that have successfully provided incentives to entrepreneurs in an exemplar country have to also design for any differences in the cultural and economic contexts of the respective countries. In other words, a country’s entrepreneurs respond differently to the incentives provided by formal institutions depending on societal incentives and the nature of opportunities due to the predominant economic structure whether agriculturally, manufacturing or services based. This thesis is among the first to shed light on

variations in EA due to both an institutional and ED context. As a result, it provides a theory that generalises to a wider range of institutional and economic contexts.

The effect of formal institutions on EA does not depend on informal institutions alone. As a result, the interaction effects between formal and informal institutions do not apply universally. For institutions to provide a universal explanation of EA, their concomitant interaction with ED becomes important. Previously, Pinillos and Reyes (2011) suggested that the contingent effect of culture on the formal institutions-EA relationship only becomes significant when considering it in the light of a country's level of ED. In particular, I find that at lower levels of ED, the positive moderating effect of higher levels of informal institutional development on the formal institutions-EA relationship increases. At higher levels of ED, the positive moderating effect of higher informal institutional development on the formal institutions-EA relationship decreases.

By introducing the nuances due to differences in ED levels, these findings enrich arguments that formal institutions are more effective within contexts where the local society supports the values and norms associated with free enterprise (Boettke et al, 2008; Biggart and Guillen, 1999; North, 1990). They also lend empirical support to arguments that formal institutional reforms have a greater impact on EA among less developed than developed countries (Haggard et al, 2008; Balamoune-Lutz, 2009; Iyigun and Rodrik, 2004). Thus, formal institutional reform particularly affects the factor and efficiency-driven stages of ED, where the structural changes introduce sharp increases in opportunities.

These results support research showing that institutions and ED have an increasing but non-linear effect on EA (Acs and Szerb, 2009). The effects of institutions and economic structure cause EA to increase more steeply among less developed than developed countries. Among developed countries, higher levels of institutions and associated low barriers to entry have been around for longer. The high levels of competition that exist among the resultant large number of enterprises tend to limit further entry (Barnett, 1997) within these developed countries.

Lastly, in the process of developing the theoretical framework, this thesis sought to develop a framework that links institutions to the conditions for EA. This framework suggests that formal institutions associate with O&Is, FC and explicit HC or education. In addition, informal institutions associate with to SC and tacit HC like practical experience.

University of Cape Town

References

- Acemoglu, D., Johnson, S. & Robinson, J. A. (2002) *An African Success Story: Botswana*, London; London, Centre for Economic Policy Research ; CEPR [Host].
- Acemoglu, D., Johnson, S., & Robinson, J.A. (2004). *Institutions as the fundamental cause of long-run growth*. Cambridge, Mass, National Bureau of Economic Research.
- Acemoglu, D., & Johnson, S. (2005). Unbundling Institutions. *JOURNAL OF POLITICAL ECONOMY -CHICAGO-*. 113, 949-995.
- Acs, Z. (2006) How Is Entrepreneurship Good for Economic Growth? *Innovations: Technology, Governance, Globalization*, 1, 97-107.
- Acs, Z., Audretsch, D. B. & Feldman, M. (1994a) R&D Spillovers and Recipient Firm Size. *The Review of Economics and Statistics*, 76, 336-40
- Acs, Z., Braunerhjelm, P., Audretsch, D. & Carlsson, B. (2009a) The Knowledge Spillover Theory of Entrepreneurship. *Small Business Economics*, 32, 15-30.
- Acs, Z., Desai, S. & Hessels, J. (2008a) Entrepreneurship, Economic Development and Institutions. *Small Business Economics*, 31, 219-234.
- Acs, Z., Desai, S. & Klapper, L. (2008b) What Does "Entrepreneurship" Data Really Show? *Small Business Economics*, 31, 265-281.
- Acs, Z. & Szerb, L. (2007) Entrepreneurship, Economic Growth and Public Policy. *Small Business Economics*, 28, 109.
- Acs, Z. & Szerb, L. (2009b) The Global Entrepreneurship Index (Geindex). *Foundations and Trends in Entrepreneurship*, 5, 341-435.
- Acs, Z. & Virgill, N. (2010) Entrepreneurship in Developing Countries. *Foundations and Trends in Entrepreneurship*, 6, 1-68.
- Ács, Z. J. (2010) *Entrepreneurship and Regional Development*, Cheltenham; Northampton, MA, Edward Elgar.
- Acs, Z. J. & Amorós, J. E. (2008) Entrepreneurship and Competitiveness Dynamics in Latin America. *Small Bus. Econ. Small Business Economics*, 31, 305-322.
- Acs, Z. J., Amorós, J. E., Bosma, N. S. & Levie, J. (2009b) From Entrepreneurship to Economic Development: Celebrating Ten Years of Global Entrepreneurship Monitor. *Frontiers of Entrepreneurship Research*, 29.

- Acs, Z. J. & Armington, C. (2004) Employment Growth and Entrepreneurial Activity in Cities. *Regional Studies*, 38, 911-27.
- Acs, Z. J. & Audretsch, D. B. (1989) Small Firm Entry in Manufacturing. *Economica*, 56, 255-265.
- Acs, Z. J., Audretsch, D. B., Braunerhjelm, P. & Carlsson, B. (2005) Growth and Entrepreneurship : An Empirical Assessment.
- Acs, Z. J., Audretsch, D. B. & Evans, D. S. (1994b) Why Does the Self-Employment Rate Vary across Countries and over Time? *Discussion paper*
- Adler, P.S., & Kwon, S.W. (2002). Social Capital: Prospects for a New Concept. *Academy of Management Review*. 27, 17-40.
- Adner, R. & Helfat, C. E. (2003) Corporate Effects and Dynamic Managerial Capabilities. *Strategic Management Journal*, 24, 1011-1025.
- Ageev, A. I., Gratchev, M. V. & Hisrich, R. D. (1995) Entrepreneurship in the Soviet Union and Post-Socialist Russia. *Small business economics.*, 7, 365.
- Aghion, P. & Bolton, P. (1997) A Theory of Trickle-Down Growth and Development. *The Review of Economic Studies.*, 64, 151.
- Aghion, P. & Howitt, P. (1992) A Model of Growth through Creative Destruction. *Econometrica: Journal of the Econometric Society*, 60, 323-351.
- Ahlstrom, D. & Bruton, G. D. (2010) Rapid Institutional Shifts and the Co-Evolution of Entrepreneurial Firms in Transition Economies. *Entrepreneurship Theory and Practice*, 34, 531-554.
- Ahlstrom, D., Bruton, G. D. & Lui, S. S. Y. (2000) Focus on Guanxi: Doing Business in China - Navigating China's Changing Economy: Strategies for Private Firms - Forging Connections with a Variety of Organizations and Individuals Is an Important Part of a Private Company's Success in China. *Business Horizons.*, 43, 5.
- Aidis, R. (2005) Institutional Barriers to Small- and Medium-Sized Enterprise Operations in Transition Countries. *Small Business Economics*, 25, 305-318.
- Aidis, R., Estrin, S. & Mickiewicz, T. (2009) Entrepreneurial Entry: Which Institutions Matter? London, Centre for Economic Policy Research.
- Aidis, R., Mickiewicz, T. & Estrin, S. (2008) Institutions and Entrepreneurship Development in Russia: A Comparative Perspective. *J. Bus. Venturing Journal of Business Venturing*, 23, 656-672.
- Aidis, R., Estrin, S., & Mickiewicz, TM. (2012). Size matters: entrepreneurial entry and government. *Small Business Economics*. 39, 119-139.

- Aiken, L. S., West, S. G. & Reno, R. R. (1991) *Multiple Regression : Testing and Interpreting Interactions*, Newbury Park, Calif., Sage Publications.
- Aldrich, H. E. (1999) *Organisations Evolving*, London, Sage.
- Aldrich, H. E. & Fiol, M. (1994) Fools Rush In? The Institutional Context of Industry Creation. *Academy of Management Review*, 19, 645-70.
- Aldrich, H., & Ruef, M. (2006). *Organizations evolving*. London, SAGE.
- Allinson, C., Chell, E. & Hayes, J. (2000) Intuition and Entrepreneurial Behaviour. *European Journal of Work & Organizational Psychology*, 9, 33-43.
- Alvarez, C., Urbano, D., Coduras, A. & Ruiz-Navarro, J. e. (2011) Environmental Conditions and Entrepreneurial Activity: A Regional Comparison in Spain. *Journal of Small Business and Enterprise Development*, 18, 120-140.
- Alvarez, S.A., Barnev, J.B., Foss, K., & Foss, N.J. (2008). Understanding opportunity discovery and sustainable advantage: the role of transaction costs and property rights. *Strategic Entrepreneurship Journal*. 2, 191-207.
- Amit, R., Brander, J. & Zott, C. (1998) Why Do Venture Capital Firms Exist? Theory and Canadian Evidence. *Journal of Business Venturing*, 13, 441-66.
- Amit, R. & Schoemaker, P. J. H. (1993) Strategic Assets and Organizational Rent. *Strategic Management Journal*, 14, 33-46.
- Amsden, A. H. (1989) *Asia's Next Giant : South Korea and Late Industrialization*, New York, Oxford University Press.
- Anderson, J. C., Hakansson, H., & Johanson, J. (1994). Dyadic Business Relationships within a Business Network Context. *The Journal of Marketing*. 58, 1-15.
- Apter, D. E. (1965) *The Politics of Modernization*, Chicago, University of Chicago Press.
- Arabsheibani, G., DeMeza, D., Maloney, J. & Pearson, B. (2000) And a Vision Appeared Unto Them of a Great Profit: Evidence of Self-Deception among the Self-Employed. *Economic Letters*, 67, 35-41.
- Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*. 18, 105-123.
- Arenius, P., & Clercq, D. (2005). A Network-based Approach on Opportunity Recognition. *Small Business Economics*. 24, 249-265.
- Audretsch, D. & Keilbach, M. (2004) Entrepreneurship Capital and Economic Performance. *Regional Studies*, 38, 949-959.

- Audretsch, D. B. (2007a) *The Entrepreneurial Society*, New York, Oxford University Press.
- Audretsch, D. B. (2007b) Entrepreneurship Capital and Economic Growth. *Oxford Review of Economic Policy*, 23, 63-78.
- Audretsch, D. B. & Acs, Z. J. (1994) New Firm Start-Ups, Technology, and Macro-Economic Fluctuations. *Small Business Economics*, 6, 439-49.
- Autio, E. (2009) The Finnish Paradox: The Curious Absence of High- Growth Entrepreneurship in Finland. The Research Institute of the Finnish Economy.
- Autio, E. & Acs, Z. (2010) Intellectual Property Protection and the Formation of Entrepreneurial Growth Aspirations. *STRATEGIC ENTREPRENEURSHIP JOURNAL*, 4, 234-251.
- Baker, T., Gedajlovic, E. & Lubatkin, M. (2005) A Framework for Comparing Entrepreneurship Processes across Nations. *Journal of International Business Studies*, 36, 492-504.
- Baker, T., & Nelson, R.E. (2005). Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage. *Administrative Science Quarterly*. 50,.
- Baker, D.D., & Cullen, J.B. (1993). Administrative Reorganization and Configurational Context: The Contingent Effects of Age, Size, and Change in Size. *Academy of Management Journal*. 36, 1251-1277.
- Balioune-Lutz, M. (2009). *Entrepreneurship and reforms in developing countries*. Urn:lsbn:978-92-9230-173-6. UNU-WIDER Helsinki. <http://hdl.handle.net/10419/45122>.
- Baltagi, B. H. (2001) *Econometric Analysis of Panel Data*, Chichester, John Wiley.
- Baltagi, B. H. & Wu, P. X. (1999) Unequally Spaced Panel Data Regressions with Ar(1) Disturbances. *Econometric Theory*, 15, 814-823.
- Banerjee, A. V. & Newman, A. F. (1993) Occupational Choice and the Process of Development. *Journal of Political Economy*, 101, 274-298.
- Barnett, W. (1997) The Dynamics of Competitive Industry. *Administrative Science Quarterly*, 42, 128-60.
- Bates, R. H. (2001) *Prosperity and Violence : The Political Economy of Development*, New York, W.W. Norton.
- Battilana, J., Leca, B., & Boxenbaum, E. (2009). How Actors Change Institutions: Towards a Theory of Institutional Entrepreneurship. *ACADEMY OF MANAGEMENT ANNALS*. 3, 65-108.

- Baum, J., Korn, H. & Kotha, S. (1995) Dominant Designs and Population Dynamics in Telecommunications Services: Founding and Failure of Facsimile Transmission Organisations, 1965-1992. *Social Science Research*, 24, 97-135.
- Baum, J., Olman, J. D., Erez, M., Schnell, E. R., Smith, K. G., Sims, H. P., Scully, J. S., & Smith, K. A. (1993). Nationality and work role interactions: A cultural contrast of Israeli and U.S. entrepreneurs' versus managers' needs. *Journal of Business Venturing*. 8, 499-512.
- Baumol, W. J. (1988) *Entrepreneurship : Productive, Unproductive and Imitative ; or the Rule of the Rules of the Game*, New York, NY, Centre for Entrepreneurial Studies, New York University, Leonard N. Stern School of Business.
- Baumol, W. J. (1990) Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98, 893-921.
- Baumol, W. J. (1993) *Entrepreneurship, Management, and the Structure of Payoffs*, Cambridge, Mass., MIT Press.
- Baumol, W. J. (2002) *The Free-Market Innovation Machine : Analyzing the Growth Miracle of Capitalism*, Princeton, Princeton University Press.
- Baumol, W. J. (2004) *The Free-Market Innovation Machine : Analyzing the Growth Miracle of Capitalism*, Princeton, NJ, Princeton University Press.
- Beck, T., Demirgüç-Kunt, A. & Levine, R. (2005) *Smes, Growth, and Poverty*, Cambridge, Mass., National Bureau of Economic Research.
- Beck, T. & Laeven, L. (2006) Institution Building and Growth in Transition Economies. *Journal of Economic Growth*, 11, 157-186.
- Becker, G. S. (1975) *Human Capital : A Theoretical and Empirical Analysis, with Special Reference to Education*, New York, National Bureau of Economic Research : distributed by Columbia University Press.
- Bedeian, A. G. & Mossholder, K. W. (1994) Simple Question, Not So Simple Answer: Interpreting Interaction Terms in Moderated Multiple Regression. *Journal of Management Journal of Management*, 20, 159-165.
- Begley, T. M., & Tan, W.-L. (2001). The Socio-Cultural Environment for Entrepreneurship: A Comparison between East Asian and Anglo-Saxon Countries. *Journal of International Business Studies*. 32, 537-553.
- Begley, T., Wee-Liang, T., Larasati, A., Rab, A., Zamora, E. & Nanayakkura, G. (1997) The Relationship between Socio-Cultural Dimensions and Interest in Starting a Business: A Multi-Country Study. IN REYNOLDS, P. D., BYGRAVE, W., CARTER, N., DAVIDSSON, P., GARTNER, W. B., MASON, C. & MCDUGALL, P. P. (Eds.) *Frontiers of Entrepreneurship Research*. Babson Park, Babson College.

- Bendix, R. (1974) *Work and Authority in Industry : Ideologies of Management in the Course of Industrialization*, Berkeley, University of California Press.
- Berger, P.L., & Luckmann, T. (1991). *The Social construction of reality*. London, Penguin.
- Bergstein, G. S. (1985). On the role of social norms in a market economy. *Public Choice*. 45.
- Berman, N. & Héricourt, J. (2010) Financial Factors and the Margins of Trade: Evidence from Cross-Country Firm-Level Data. *Journal of development economics*., 93, 206.
- Berry, W. D. (1984). *Nonrecursive causal models*. Beverly Hills, Calif, Sage Publications.
- Biggart, N. W. & Guillén, M. F. (1999) Developing Difference: Social Organization and the Rise of the Auto Industries of South Korea, Taiwan, Spain, and Argentina. *American Sociological Review*, 64, 722-747.
- Black, J. A. & Boal, K. B. (1994) Strategic Resources: Traits, Configurations and Paths to Sustainable Competitive Advantage. *Strategic Management Journal*, 15, 131-148.
- Blanchflower, D. & Oswald, A. (1998) What Makes an Entrepreneur. *Journal of Labour Economics*, 16, 26-60.
- Blanchflower, D., Oswald, A. & Stutzer, A. (2001) Latent Entrepreneurship across Nations. *European Economic Review*, 45.
- Blau, D. (1987) A Time-Series Analysis of Self-Employment in the United States *Journal of Political Economy*, 95, 445-67.
- Boettke, P. J. & Coyne, C. J. (2003) Entrepreneurship and Development: Cause or Consequence? *Advances in Austrian Economics*, 67-87.
- Boettke, P. J., Coyne, C. J. & Leeson, P. T. (2008a) The Continuing Relevance of F.A. Hayek's Political Economy. *Advances in Austrian Economics*, 11, 79-98.
- Boettke, P. J., Coyne, C. J. & Leeson, P. T. (2008b). Institutional Stickiness and the New Development Economics. *American Journal of Economics and Sociology*. 67, 331-358.
- Boettke, P. J., & Coyne, C. J. (2009). *Context matters: institutions and entrepreneurship*. Hanover, MA, Now Publishing.
- Bosma, N., Acs, Z. J., Autio, E., Coduras, A. & Levie, J. (2009) Global Entrepreneurship Monitor: 2008 Executive Report. Babson Park, Babson College.

- Bosma, N. & Levie, J. (2010) Global Entrepreneurship Monitor 2009 Executive Report, . Babson Park, MA,, Babson College.
- Bosma, N., Stam, E. & Wennekers, A. R. M. (2010) *Intrapreneurship an International Study*, Zoetermeer, Scales.
- Bowen, H. P. & De Clercq, D. (2008) Institutional Context and the Allocation of Entrepreneurial Effort. *Journal of International Business Studies*, 39, 747-767.
- Brambor, T., Clark, W. R. & Golder, M. (2006) Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis*, 14, 63-82.
- Brandl, J. & Bullinger, B. (2009) Reflections on the Societal Conditions for the Pervasiveness of Entrepreneurial Behaviour in Western Societies. *Journal of Management Inquiry*, 18, 159-173.
- Braumoeller, B. F. (2004) Hypothesis Testing and Multiplicative Interaction Terms. *International Organization*, 58, 807-820.
- Brinkman, R. (1995) Economic Growth Versus Economic Development: Toward a Conceptual Clarification. *Journal of economic issues.*, 29, 1171.
- Brown, N. (2008) Econ 3066 Lecture Notes: Economic Development. Classic Theories of Economic Development. Reading: Todaro Chapter 3. IN UNIVERSITY,N.(Ed.),
www.nipissingu.ca/faculty/natalyab/ECON3066/Lecturenotes/Devlc3.ppt.
- Brüderl, J. (2005) Panel Data Analysis. Mannheim; Baden-Württemberg: University of Mannheim.
- Bruton, G. D. & Ahlstrom, D. (2003) An Institutional View of China's Venture Capital Industry - Explaining the Differences between China and the West. *Journal of business venturing.*, 18, 233.
- Bruton, G. D., Fried, V. H., & Manigart, S. (2005). Institutional Influences on the Worldwide Expansion of Venture Capital. *Entrepreneurship Theory and Practice*. 29, 737-760.
- Bruton, G. D., Ahlstrom, D. & Li, H.L. (2010) Institutional Theory and Entrepreneurship: Where Are We Now and Where Do We Need to Move in the Future? *Entrepreneurship Theory and Practice*, 34, 421-440.
- Bruton, G. D., Ahlstrom, D. & Obloj, K. (2008) Entrepreneurship in Emerging Economies: Where Are We Today and Where Should the Research Go in the Future. *Entrepreneurship Theory and Practice*, 32, 1-14.
- Bruton, G. D. & Rubanik, Y. (2002) Resources of the Firm, Russian High-Technology Startups, and Firm Growth. *Journal of business venturing.*, 17, 553.

- Burt, R. S. (1992) *Structural Holes: The Social Structure of Competition*, Cambridge, Mass., Harvard University Press.
- Burt, R. S. (1997) The Contingent Value of Social Capital. *Administrative science quarterly*, 42, 339.
- Busenitz, L. W. & Barney, J. (1997) Differences between Entrepreneurs and Managers in Large Organisations: Biases and Heuristics in Strategic Decision Making. *Journal of Business Venturing*, 12, 9-30.
- Busenitz, L. W. (1999). Entrepreneurial Risk and Strategic Decision Making: It's a Matter of Perspective. *Journal of Applied Behavioral Science*. 35, 325-340.
- Bygrave, W. & Minniti, M. (2000) The Social Dynamics of Entrepreneurship. *Entrepreneurship: Theory & Practice*, 24, 25-36.
- Cardoso, F. E. & Faletto, V. E. (1979) *Dependency and Development in Latin America*, Berkeley, University of California.
- Carey, S., Lawson, B., & Krause, D. (2011). Social capital configuration, legal bonds and performance in buyer-supplier relationships. *Journal of Operations Management*. 29, 277-288.
- Carree, M., van Stel, A., Thurik, R. & Wennekers, S. (2002) Economic Development and Business Ownership: An Analysis Using Data of 23 Oecd Countries in the Period 1976-1996. *Small Business Economics*, 19, 271-290.
- Carree, M., Van Stel, A., Thurik, R. & Wennekers, S. (2007) The Relationship between Economic Development and Business Ownership Revisited. *ENTREPRENEURSHIP AND REGIONAL DEVELOPMENT*, 19, 281-291.
- Carree, M. A. & Thurik, A. R. (2003) The Impact of Entrepreneurship on Economic Growth. IN ACS, Z. J. & AUDRETSCH, D. B. (Eds.) *Handbook of Entrepreneurship Research*. Springer New York.
- Carrol, G. & Hannan, M. (2000) *The Demography of Corporations and Industries*, Princeton, Princeton University Press.
- Carrol, G. & Huo, P. (1986) Organisational Task and Institutional Environments in Ecological Perspective: Findings from the Local Newspaper Industry. *American journal of Sociology*, 91, 838-73.
- Cassar, G. (2006) Entrepreneur Opportunity Costs and Intended Venture Growth. *JOURNAL OF BUSINESS VENTURING*, 21, 610-632.
- Casson, M. (1995) *Entrepreneurship and Business Culture*, Aldershot, Edward Elgar.
- Casson, M. C., Della Giusta, M. & Kambhampati, U. S. (2010) Formal and Informal Institutions and Development. *World development*., 38, 137.

- Chang, H.-J. (2010). Institutions and economic development: theory, policy and history. *Journal of Institutional Economics*. 1-26.
- Chavance, B. (2008) Formal and Informal Institutional Change : The Experience of Postsocialist Transformation. *The European Journal of Comparative Economics*, 5, pp. 57-71.
- Choi, Y. & Phan, P. (2006) The Influences of Economic and Technology Policy on the Dynamics of New Firm Formation. *Small Business Economics*, 26, 493-503.
- Ciccone, A. & Matsuyama, K. (1996) Start-up Costs and Pecuniary Externalities as Barriers to Economic Development *Journal of Development Economics*, 4, 33-59.
- Cohen, B., & Winn, M. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*. 22, 29-49.
- Cohen, J. & Cohen, J. (2003) *Applied Multiple Regression/Correlation Analysis for the Behavioural Sciences*, Mahwah, N.J., L. Erlbaum Associates.
- Coleman, J. S. (1988) Social Capital in the Creation of Human Capital. *The American Journal of Sociology*, 94, S95-S120.
- Collins, K. (2002). "Clans, Pacts, and Politics in Central Asia." *Journal of Democracy* 13(3): 137-151
- Coyne, C. J. & Sobel, R. S. (2010) How Are Institutions Related? IN GWARTNEY, J. D., HALL, J. C. & LAWSON, R. A. (Eds.) *Economic Freedom of the World: 2010 Annual Report*. Online, Fraser Institute.
- Cox, C. B., & Beier, M. E. (2009). The moderating effect of individual differences on the relationship between the framing of training and interest in training. *International Journal of Training and Development*. 13, 247-261.
- Cromie, S. & Birley, S. (1992) Networking by Female Business Owners in Northern Ireland. *Journal of Business Venturing*, 7, 237-51.
- Coyne, C.J. and Sobel, R.S. (2010) How Are Institutions Related?. In Gwartney, J. D., Hall, J.C. & Lawson, R.A. (Eds) *Economic Freedom of the World: 2010 Annual Report*. Online, Fraser Institute.
- Curtin, R. T., Reynolds, P. D., Schenkel, M. T., Hechavarria, D. M. & Matthews, C. H. (2009) The Role of Human and Social Capital and Technology in Nascent Ventures. *New Firm Creation in the United States*. Springer New York.
- Danis, W. M., & Shipilov, A. V. (2002). A comparison of entrepreneurship development in two post-communist countries: the case of Hungary and Ukraine. *Journal of Developmental Entrepreneurship*. 7, 67-94.

- Danis, W. M., De Clercq, D. & Petricevic, O. (2010a) Are Social Networks More Important for New Business Activity in Emerging Than Developed Economies? An Empirical Extension. *International Business Review*, In Press, Corrected Proof.
- Danis W.M., Chiaburu D.S., & Lyles M.A. (2010b). The impact of managerial networking intensity and market-based strategies on firm growth during institutional upheaval: A study of small and medium-sized enterprises in a transition economy. *Journal of International Business Studies*. 41, 287-307.
- Davidsson, P. & Henrekson, M. (2002) Determinants of the Prevalence of Start-Ups and High-Growth Firms. *Small Business Economics*, 19, 81-104.
- Davidsson, P. & Honig, B. (2003a) The Role of Social and Human Capital among Nascent Entrepreneurs. *Journal of business venturing*., 18, 301.
- Davidsson, P. & Honig, B. (2003b) The Role of Social Capital among Nascent Entrepreneurs *Journal of Business Venturing*, 301-331.
- Davidsson, P., Hunter, E. & Klofsten, M. (2006) Institutional Forces: The Invisible Hand That Shapes Venture Ideas? *INTERNATIONAL SMALL BUSINESS JOURNAL*, 24, 115-132.
- De Clercq, D., Danis, W. M. & Dakhli, M. (2010a) The Moderating Effect of Institutional Context on the Relationship between Associational Activity and New Business Activity in Emerging Economies. *International Business Review*, 19, 85-101.
- De Clercq D., Dimov D., & Thongpapanl N. (2010b). The moderating impact of internal social exchange processes on the entrepreneurial orientation-performance relationship. *Journal of Business Venturing*. 25, 87-103.
- De Clercq, D., Meuleman, M. & Wright, M. (2011a) A Cross-Country Investigation of Micro-Angel Investment Activity: The Roles of New Business Opportunities and Institutions. *International Business Review*, In Press, Corrected Proof.
- De Clercq, D., Lim, D. S., & Oh, C. H. (2011b). Individual-Level Resources and New Business Activity: The Contingent Role of Institutional Context. *Entrepreneurship Theory and Practice*. May 2011.
- De Soto, H. (2000). *The mystery of capital: why capitalism triumphs in the West and fails everywhere else*. New York, Basic Books.
- Dean, T. J., Brown, R. & Bamford, C. (1998) Differences in Large and Small Firm Responses to Environmental Context: Strategic Implications from a Comparative Analysis of Business Formations. *Strategic Management Journal* 19, 709-28.

- Delery, J. E. & Doty, D. H. (1996) Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistic, Contingency, and Configurational Performance Predictions. *Academy of Management Journal*, 39, 802-835.
- Delmar, F. & Davidsson, P. (2000) Where Do They Come From? Prevalence and Characteristics of Nascent Entrepreneurs. *Entrepreneurship and Regional Development*, 12, 1-23.
- Dennis Jr., W. J. (2011) Entrepreneurship, Small Business and Public Policy Levers. *Journal of Small Business Management*, 92–106.
- Desai, S. (2009) *Measuring Entrepreneurship in Developing Countries*, Helsinki, Finland, United Nations University, World Institute for Development Economics Research.
- Desai, M., Gompers, P., & Lerner, J. (2003) *Institutions, capital constraints and entrepreneurial firm dynamics: Evidence from Europe*. Cambridge, Mass, National Bureau of Economic Research.
- Dess, G. G., Newport, S. & Rasheed, A. M. A. (1993) Configuration Research in Strategic Management: Key Issues and Suggestions. *Journal of Management* -, 19, 775.
- Deutschmann, C. (2001) The Promise of Absolute Wealth: Capitalism as a Religion? Study *Eleven*, 66, 32-56.
- Dikova, D., Sahib, P.R., & Van Witteloostuijn, A. (2010). Cross-Border Acquisition Abandonment and Completion: The Effect of Institutional Differences and Organizational Learning in the International Business Service Industry, 1981-2001. *Journal of International Business Studies*. 41, 223-245.
- DiMaggio, P. J. & Powell, W. W. (1983) The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, 48, 147-160.
- Dixit, A. (2004) Some Lessons from Transaction-Cost Politics for Less-Developed Countries. *Sage Public Administration Abstracts*, 31.
- Djankov, S., La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2002). The Regulation of Entry. *The Quarterly Journal of Economics*. 117, 1-37.
- Djankov, S., & Murrell, P. (2002). Enterprise Restructuring in Transition: A Quantitative Survey. *Journal of Economic Literature*. 40,.
- Djankov, S., Ganser, T., McLiesh, C., Ramalho, R. & Shleifer, A. (2008a) The Effect of Corporate Taxes on Investment and Entrepreneurship. *Working paper series*, ALL.
- Djankov, S., & Ramalho, R. M., R. (2008b) *Employment Laws in Developing Countries*, London, Centre for Economic Policy Research.

- Dolton, P. & Makepeace, G. (1990) Self Employment among Graduates. *Bulletin of Economic Research* 42, 35-53.
- Doms, M., Lewis, E. & Robb, A. (2010) Local Labour Force Education, New Business Characteristics, and Firm Performance. *Journal of urban economics.*, 48, 61.
- Dore, R. P. (1973) *British Factory, Japanese Factory : The Origins of National Diversity in Industrial Relations*, Berkeley, University of California Press.
- Doty, D., Glick, W. H. & Huber, G. P. (1993) Fit, Equifinality, and Organizational Effectiveness: A Test of Two Configurational Theories. *ACADEMY OF MANAGEMENT JOURNAL*, 36, 1196.
- Doty, D. H. & Glick, W. H. (1994) Typologies as a Unique Form of Theory Building: Toward Improved Understanding and Modelling. *Academy of Management Review*, 19, 230-251.
- Durlauf, S.N., & Fafchamps, M. (2005). Social Capital. *Handbooks in Economics*. 1B, 1639-1700.
- Dutta, DK., & Crossan, MM. (2005). The Nature of Entrepreneurial Opportunities: Understanding the Process Using the 4I Organizational Learning Framework. *Entrepreneurship Theory and Practice*. 29, 425-449.
- Earley, P. C. & Gibson, C. B. (1998) Taking Stock in Our Progress on Individualism - Collectivism: 100 Years of Solidarity and Community. *Journal of management.*, 24, 265.
- Easterly, W. (2001) *The Elusive Quest for Growth : Economists' Adventures and Misadventures in the Tropics*, Cambridge, Mass., MIT Press.
- Echambadi, R. & Hess, J. D. (2007) Mean-Centering Does Not Alleviate Collinearity Problems in Moderated Multiple Regression Models Contrary to Conventional Wisdom, Collinearity Problems Are Impervious to Mean-Centering in Moderated Regression. *MARKETING SCIENCE*, 26, 438-445.
- Eckhardt, J. (2003) Industry Differences in Entrepreneurial Opportunities. University of Maryland.
- Eisenhardt, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14(4): 532-550.
- Erez, M., & Earley, P. C. (1993). *Culture, self-identity, and work*. N.Y., Oxford University Press.
- Estrin, S. & Prevezer, M. (2010) A Survey on Institutions and New Firm Entry: How and Why Do Entry Rates Differ in Emerging Markets? *Economic Systems*, 34, 289-308.

- Etzioni, A. (1968) *The Active Society : A Theory and Political Processes*, London, Collier-Macmillan.
- Etzioni, A. (1987) Entrepreneurship, Adaptation and Legitimation a Macro-Behavioural Perspective. *Journal of Economic Behaviour & Organization*, 8, 175-189.
- Evans, D. & Jovanovic, B. (1989) An Estimated Model of Entrepreneurial Choice under Liquidity Constraints. *Journal of Political Economy*, 97, 808-827.
- Evans, D. S. & Leighton, L. S. (1989) Some Empirical Aspects of Entrepreneurship. *The American Economic Review*, 79, 519-535.
- Evans, P. B. (1979) *Dependent Development : The Alliance of Multinational, State, and Local Capital in Brazil*, Princeton, N.J., Princeton University Press.
- Fafchamps, M. (2006) Development and Social Capital. *Journal of Development Studies*, 42, 1180-1198.
- Fatoki O.O., & Van Aardt-Smit A. (2011). Constraints to credit access by new SMEs in South Africa: A supply-side analysis. *African Journal of Business Management*. 5, 1413-1425.
- Ferguson, N. (2011). *Civilization: the West and the rest*. New York, Penguin Press.
- Field, A. P. (2001) Meta-Analysis of Correlation Coefficients: A Monte Carlo Comparison of Fixed- and Random-Effects Methods. *Psychological methods*, 6, 161-80.
- Field, A. P. (2009) *Discovering Statistics Using Spss : (and Sex and Drugs and Rock 'N' Roll)*, Los Angeles [i.e. Thousand Oaks, Calif.]; London, SAGE Publications.
- Fogel, K., Hawk, A., Morck, R., & Yeung, B. (2006). Institutional Obstacles to Entrepreneurship. In Casson, M. (2006). *The Oxford handbook of entrepreneurship*. Oxford, Oxford University Press.
- Fonseca, R., Lopez-Garcia, P. & Pissarides, C. (2001) Entrepreneurship, Start-up Costs and Employment. *European Economic Review*, 45, 692-705.
- Fortunato, M. W.-P. & Alter, T. R. (2011) The Individual-Institutional-Opportunity Nexus: An Integrated Framework for Analyzing Entrepreneurship Development. *Entrepreneurship Research Journal*, 1.
- Francois, P., & Zabochnik, J. (2005). Trust, Social Capital, and Economic Development. *Journal of the European Economic Association*. 3, 51-94.
- Frank, A. G. (1967) *Capitalism and Underdevelopment in Latin America; Historical Studies of Chile and Brazil*, New York, Monthly Review Press.

- Fukuyama, F. (1996). *Trust: the social virtues and the creation of prosperity*. New York, Free Press.
- Gartner, W. B. (1985) A Conceptual Framework for Describing the Phenomenon of New Venture Creation. *Academy of Management Review*, 10, 696-706.
- Gartner, W. B. (1989) "Who Is an Entrepreneur?" Is the Wrong Question. *Entrepreneurship: Theory & Practice*, 13, 47-68.
- Geertz, C. (1963) *Old Societies and New States; the Quest for Modernity in Asia and Africa*, New York, Free Press of Glencoe Collier-Macmillan.
- Gentry, W. & Hubbard, R. (2000) Tax Policy and Entrepreneurial Entry. *American economic review papers and proceedings*, 90, 283-92.
- Georgellis, Y. & Wall, H. (1999) What Makes a Region Entrepreneurial? Evidence from Britain. *Annals of Regional Science*, 34, 385-403.
- Ghoshal, S., Hahn, M. & Moran, P. (1999) Management Competence, Firm Growth and Economic Progress. *Contributions to Political Economy*, 18, 121-150.
- Gnyawali, D. R. & Fogel, D. S. (1994) Environments for Entrepreneurship Development: Key Dimensions and Research Implications. *Entrepreneurship theory and practice*, 43 - 62.
- Godin, K., Clemens, J. & Veldhuis, N. (2008) Measuring Entrepreneurship: Conceptual Frameworks and Empirical Indicators. Vancouver, Fraser Institute.
- Goldstein, H. (2003) *Multilevel Statistical Models*, London, Arnold.
- Gould, R.V. (1993). Collective Action and Network Structure. *American Sociological Review*. 58, 182-196.
- Granovetter, M. (1992) Economic Institutions as Social Constructions: A Framework for Analysis. *Acta Sociologica*, 35, 3-11.
- Greif, A. (1994). Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies. *Journal of Political Economy*. 102, 912-950.
- Gries, T. & Naude, W. (2009a) Entrepreneurship and Regional Economic Growth: Towards a General Theory of Start-Ups. *Innovation: The European Journal of Social Science Research*, 22, 309 - 328.
- Gries, T. & Naude, W. (2009b) Entrepreneurship and Structural Economic Transformation. *Small Bus. Econ. Small Business Economics*, 34, 13-29.
- Guillen, M. F. (2000) Comparative Economic Sociology Blending Social Stratification, Organizational Theory, and the Sociology of Development, , .

Latin American Studies Association Annual Meeting. Miami, The Wharton School & Department of Sociology University of Pennsylvania.

- Gulati, R. & Puranam, P. (2009) Renewal through Reorganization: The Value of Inconsistencies between Formal and Informal Organization. *Organ. Sci. Organization Science*, 20, 422-440.
- Haggard, S., Macintyre, A., & Tiede, L. (2008). The Rule of Law and Economic Development. *Annual Review of Political Science*. 11, 205-234.
- Halaby, C. N. (2004). Panel Models in Sociological Research: Theory into Practice. *Annual Review of Sociology*. 30, 507-544.
- Hallen, B. L. (2008) The Causes and Consequences of the Initial Network Positions of New Organizations: From Whom Do Entrepreneurs Receive Investments? *Adm. Sci. Q. Administrative Science Quarterly*, 53, 685-718.
- Halliday, TC., & Carruthers, BG. (2007). The Recursivity of Law: Global Norm Making and National Lawmaking in the Globalization of Corporate Insolvency Regimes. *American Journal of Sociology*. 112, 1135-1202.
- Hamilton, B. H. (2000) Does Entrepreneurship Pay? An Empirical Analysis of the Returns of Self-Employment. *Journal of Political Economy*, 108, 604-631.
- Hamilton-Hart, N. (2000). "The Singapore state revisited." *The Pacific Review* 13(2): 195-216,
- Harms, R., Kraus, S. & Schwarz, E. (2009) The Suitability of the Configuration Approach in Entrepreneurship Research. *Entrepreneurship and Regional Development*, 21, 25-49.
- Harper, D. (1997) Institutional Conditions for Entrepreneurship. New York University.
- Harper, D. A. (2003). *Foundations of entrepreneurship and economic development*. London, Routledge,
- Hayton, J. C., George, G., & Zahra, S. A. (2002). National culture and entrepreneurship: a review behavioral research. *Entrepreneurship Theory and Practice*. 26, 33-52.
- Hedges, L. V. & Vevea, J. L. (1998) Fixed- and Random-Effects Models in Meta-Analysis. *PSYCHOLOGICAL METHODS*, 3, 486-504.
- Hegele, C. & Kieser, A. (2001) Control the Construction of Your Legend or Someone Else Will: An Analysis of Texts on Jack Welch. *Journal of Management Inquiry*, 10, 298-309.
- Helfat, C. & Peteraf, M. (2009) Understanding Dynamic Capabilities: Progress Along a Developmental Path. *Strategic Organization*, 7, 91-102.
- Hills, G. E., Giglierano, J. J. & Hultman, C. M. (1997) Research at the Marketing/Entrepreneurship Interface.

- Hindle, K. (2006) Entrepreneurial Innovation in Australia in 2005 : A Summary of Salient Data from the 2005 Gem Australia National Adult Population Survey. Swinburne University of Technology.
- Hirsch, P. M. & Lounsbury, M. (1997) Ending the Family Quarrel: Toward a Reconciliation Of "Old" And "New" Institutionalisms. *The American behavioural scientist.*, 40, 406.
- Hoffmann, A. (2007) A Rough Guide to Entrepreneurship Policy. IN AUDRETSCH, D. B., GRILO, I. & THURIK, A. (Eds.) *Handbook of Research on Entrepreneurship Policy*. Cheltenham, UK, Edward Elgar.
- Hoffmann, A. & Gabr, H. (2006) A General Policy Framework for Entrepreneurship. FORA.
- Hofstede, G. (1991) *Cultures and Organizations : Software of the Mind*, London, McGraw-Hill Book Company.
- Hofstede, G. & Hofstede, G. J. (2004) *Cultures and Organizations : Software of the Mind : [Intercultural Cooperation and Its Importance for Survival]*, London, McGraw-Hill.
- Hofstede, G. H. (2001) *Culture's Consequences : Comparing Values, Behaviours, Institutions, and Organizations across Nations*, Thousand Oaks, Calif., Sage Publications.
- Hofstede, G. H. & Hofstede, G. J. (2005) *Cultures and Organizations : Software of the Mind*, New York, McGraw-Hill.
- Hogfeldt, P. (2004). The history and politics of corporate ownership in Sweden. Cambridge, Mass, National Bureau of Economic Research.
- Höhmnn, H.-H. & Welter, F. (2005) Trust and Entrepreneurship : A West-East Perspective. Cheltenham, UK; Northampton, MA, Edward Elgar.
- Holmes, T. & Schmitz, J. (1993) Specialisation in Entrepreneurship. *Advances in the study of entrepreneurship, innovation and economic growth*, 6, 85-108.
- Inglehart, R., & Baker, W. E. (2000). Modernization, Cultural Change, and the Persistence of Traditional Values. *American Sociological Review.* 65, 19-51.
- Inman, R. P. (1989) *Managing the Service Economy: Prospects and Problems*, Cambridge, Cambridge University Press.
- Ireland, R. D., Tihanyi, L., & Webb, J. W. (2008). A Tale of Two Politico-Economic Systems: Implications for Entrepreneurship in Central and Eastern Europe. *Entrepreneurship Theory and Practice.* 32, 107-130.
- Iyigun, M.F., & Rodrik, D. (2004). *On the efficacy of reforms: policy tinkering, institutional change, and entrepreneurship*. Cambridge, Mass, National Bureau of Economic Research.

- Jaccard, J., Turrisi, R. & Wan, C. K. (2003) *Interaction Effects in Multiple Regression*, Newbury Park, Sage Publications.
- Jackson, L. F. (1984) Hierarchic Demand and the Engel Curve for Variety. *The Review of Economics and Statistics*, 66, 8-15.
- Jacobs, B. (2007) Real Options and Human Capital Investment. *Labour economics.*, 14, 913.
- Johnson, S; McMillan, J; Woodruff, C (2002) Property Rights and Finance. *Am.Econ.Rev.*, 2002, 92, 5, 1335-1356
- Jovanovic, B. (1994) Firm Formation with Heterogeneous Management and Labour Skills. *SMALL BUSINESS ECONOMICS*, 6, 185.
- Jovanovic, B. & Gilbert, R. (1993) The Diversification of Production. *Brookings Papers on Economic Activity. Microeconomics*. The Brookings Institution
- Jutting, J., Drechsler, D., Bartsch, S., & De Soysa, I. (2007). *Informal Institutions How Social Norms Help or Hinder Development*. Paris, OECD Publishing.
- Kam, C. & Franzese, R. 2003. 'Modeling and interpreting interactive hypotheses in regression analysis: A brief refresher and some practical advice.' Working paper. University of Michigan, Ann Arbor.
- Kanniainen, V. & Poutvaara, P. (2007) The Economics of Entrepreneurship - Imperfect Transmission of Tacit Knowledge and Other Barriers to Entrepreneurship. *Comparative labour law & policy journal.*, 28, 675.
- Kanniainen, V. & Vesala, T. (2005) Entrepreneurship and Labour Market Institutions. *Economic modelling.*, 22, 828-847.
- Kantis, H., Angelelli, P., Moori Koenig, V., Inter-American Development, B. & Fundes (2005) *Developing Entrepreneurship : Experience in Latin America and Worldwide*, Washington, DC, Inter-American Development Bank, FUNDES International.
- Kao, R. W., Kao, R. R. & Kao, K. R. (2011) Evolution of Entrepreneurship: Towards Stewardship-Based Economics. IN DANA, L. P. (Ed.) *World Encyclopaedia of Entrepreneurship*. Cheltenham, UK; Northampton, MA, Edward Elgar.
- Kelly, D., Bosma, N. & Amoros, J. E. (2011) Global Entrepreneurship Monitor 2010 Executive Report, . Babson Park, MA,, Global Entrepreneurship Research Association (GERA).
- Kerekes, C. B., & Williamson, C. R. (2008). Unveiling de Soto's mystery: property rights, capital formation, and development. *Journal of Institutional Economics*. 4.
- Keuschnigg, C. & Nielsen, S. (2003) Tax Policy, Venture Capital, and Entrepreneurship. *Journal of Public Economics*, 87, 175-203.

- Keuschnigg, C., & Nielsen, S. (2004). Progressive Taxation, Moral Hazard, and Entrepreneurship. *Journal of Public Economic Theory*. 6, 471-490.
- Khanna, T., & Palepu, K. (1997). Why Focused Strategies May Be Wrong For Emerging Markets. *HARVARD BUSINESS REVIEW*. 75, 41-54.
- Kihlstrom, R. E. & Laffont, J.-J. (1979) A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion. *J POLIT ECON Journal of Political Economy*, 87.
- Kim, U., Triandis, H. C., Kagitcibasi, C., Choi, S.-C., Yoon, G., & Stalder, D. R. (1996). Individualism and Collectivism: Theory, Method, and Applications. *Contemporary Psychology*. 41, 1218.
- Kim, J., Kaye, J. & Wright, L. (2001) Moderating and Mediating Effects in Causal Models. *Issues in Mental Health Nursing*, 22, 63-75.
- Kirzner, I. M. (1973) *Competition and Entrepreneurship*, Chicago, University of Chicago Press.
- Kirzner, I. M. (1975) *The Economic Point of View : An Essay in the History of Economic Thought*, Kansas City, KS, Sheed and Ward.
- Kirzner, I. M. (1997) Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach. *Journal of Economic Literature*, 35, 60-85.
- Klapper, L., Amit, R., Guillén, M. & Quesada, J. (2010) Entrepreneurship and Firm Formation across Countries. IN LERNER, J. & SCHOAR, A. (Eds.) *International Differences in Entrepreneurship*. Chicago, University of Chicago Press.
- Klapper, L. & Delgado, J. (2007) Entrepreneurship: New Data on Business Creation and How to Promote It. *Viewpoint Series*. Washington D.C, World Bank Group Financial Sector Vice Presidency.
- Klapper, L., Lewin, A. & Delgado, J. M. Q. (2009) The Impact of the Business Environment on the Business Creation Process. Washington, D.C., World Bank.
- Klapper, L., Singapore Management University. Office of, R. & Wharton-Singapore Management University Research, C. (2007) *Entrepreneurship and Firm Formation across Countries*, Singapore, Office of Research, Singapore Management University.
- Klapper, L., Laeven, L. & Rajan, R. (2006) Entry Regulation as a Barrier to Entrepreneurship. *Journal of financial economics*., 82, 591.
- Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff?: a cross-country investigation. *The Quarterly Journal of Economics*. 112.
- Knack, S. (2001). *Trust, associational life, and economic performance*. Knack, Stephen (2001): Trust, Associational Life, and Economic Performance.

Published in: The Contribution of Human and Social Capital to Sustained Economic Growth and Well-Being (2001): Pp. 172-202. http://mpra.ub.uni-muenchen.de/27247/1/Knack_quebec_aug17.pdf.

- Klyver, K., Hindle, K. & Meyer, D. (2008) Influence of Social Network Structure on Entrepreneurship Participation--a Study of 20 National Cultures. *The International Entrepreneurship and Management Journal*, 4, 331-347.
- Knowles, S. (2006). *Is social capital part of the institutions continuum and is it a deep determinant of development?* Helsinki, Finland, UNU World Inst. for Development Economics Research (UNU/WIDER).
- Kögel, T. (2004) Did the Association between Fertility and Female Employment within Oecd Countries Really Change Its Sign? *Journal of Population Economics*, 17, 45-65.
- Kohler, U., & Kreuter, F. (2009). *Data analysis using stata*. College Station, Tex, Stata Press.
- Koop, G. (2008) *Introduction to Econometrics*, Chichester, England; Hoboken, NJ, John Wiley & Sons.
- Kreiser PM., Marino L.D., Dickson P., & Weaver K.M. (2010). Cultural influences on entrepreneurial orientation: The impact of national culture on risk taking and proactiveness in SMEs. *Entrepreneurship: Theory and Practice*. 34, 959-983.
- Kwon, S.-W. & Arenius, P. (2010) Nations of Entrepreneurs: A Social Capital Perspective. *Journal of business venturing.*, 25, 315.
- La Porta, R. (1997). *Legal determinants of external finance*. Cambridge, MA, National Bureau of Economic Research.
- La Porta, R. & Shleifer, A. (2008) The Unofficial Economy and Economic Development. IN RESEARCH, N. B. O. E. (Ed.) Cambridge, Mass., National Bureau of Economic Research.
- Lazear, E. P. (2005). Entrepreneurship. *Journal of Labor Economics*. 23, 649-680.
- Le, H., Schmidt, F. & Putka, D. (2009) The Multifaceted Nature of Measurement Artifacts and Its Implications for Estimating Construct-Level Relationships. *Organizational Research Methods*, 12, 165-200.
- Leedy, P. D. & Ormrod, J. E. (2005) *Practical Research : Planning and Design*, Upper Saddle River, N.J., Prentice Hall.
- Leff, N. H. (1979) Entrepreneurship and Economic Development: The Problem Revisited. *Journal of Economic Literature*, 17, 46.
- Leibenstein, H. (1968) Entrepreneurship and Development. *The American Economic Review*, 58, 72-83

- Leibenstein, H. (1978) *General X-Efficiency Theory and Economic Development*, New York, Oxford University Press.
- Leung, S.-w., Wan, P.-s., Wong, S.-l. & Hong Kong Institute of Asia-Pacific, S. (2008) *Indicators of Social Development : Hong Kong 2006*, Hong Kong, Hong Kong Institute of Asia-Pacific Studies, Chinese University of Hong Kong.
- Levie, J. & Autio, E. (2008) A Theoretical Grounding and Test of the Gem Model. *Small Business Economics*, 31, 235-263.
- Levie, J. & Autio, E. (2011) Regulatory Burden, Rule of Law, and Entry of Strategic Entrepreneurs: An International Panel Study. *Journal of Management Studies*.
- Li, S., S. H. Park (2003). "The Great Leap Forward: The Transition From Relation-Based Governance to Rule-Based Governance " *Organisational Dynamics* **33**(1): 63-78.
- Li, Y., & Zahra, S. A. (2012). Formal institutions, culture, and venture capital activity: A cross-country analysis. *Journal of Business Venturing*. 27, 95-111.
- Liao, J. & Welsch, H. (2003) Social Capital and Entrepreneurial Growth Aspiration: A Comparison of Technology- and Non-Technology-Based Nascent Entrepreneurs. *JOURNAL OF HIGH TECHNOLOGY MANAGEMENT RESEARCH*, 14, 149-170.
- Liao, J. & Welsch, H. (2005) Roles of Social Capital in Venture Creation: Key Dimensions and Research Implications*. *Journal of Small Business Management*, 43, 345-362.
- Lim, D. S. K., Morse, E. A., Mitchell, R. K., & Seawright, K. K. (2010). Institutional environment and entrepreneurial cognitions: A comparative business systems perspective. *Entrepreneurship Theory and Practice*, 34(3), 491-516.
- Lipsey, M. W. & Wilson, D. B. (2001) *Practical Meta-Analysis*, Thousand Oaks, Calif., Sage Publications.
- Lopez-Claros, A., Altinger, L., Blanke, J., Drzeniek, M. & Mia, I. (2007) The Global Competitiveness Index: Identifying the Key Elements of Sustainable Growth. IN FORUM, W. E. (Ed.) *The global competitiveness report 2006-2007*
- Geneva, World Economic Forum.
- Lucas, R. (1978) On the Size Distribution of Business Firms. *Bell journal of economics*, 9, 508-523.
- Lucas, R. E. (1993) Making a Miracle. *Econometrica: Journal of the Econometric Society*, 61, 251-272.

- Lumpkin, G. T. & Dess, G. G. (1996) Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *The Academy of Management review.*, 21, 135.
- Lundström, A. & Stevenson, L. (2002) *On the Road to Entrepreneurship Policy*, Stockholm, Swedish Foundation for Small Business Research
- Lundström, A. & Stevenson, L. (2005) *Entrepreneurship Policy: Theory and Practice*, New York, Springer.
- Luo, Y. (2003). Market-Seeking MNEs in an Emerging Market: How Parent-Subsidiary Links Shape Overseas Success. *Journal of International Business Studies*. 34, 290-309.
- Malach-Pines, A., Levy, H., Utasi, A. & Hill, T. L. (2005) Entrepreneurs as Cultural Heroes: A Cross-Cultural, Interdisciplinary Perspective. *Journal of Managerial Psychology*, 20, 541-555.
- Malecki, E. J. (1993) Entrepreneurship in Regional and Local Development. *International Regional Science Review International Regional Science Review*, 16, 119-153.
- Manolova, T.S., Eunni, R.V., & Gyoshev, B. S. (2008). Institutional Environments for Entrepreneurship: Evidence from Emerging Economies in Eastern Europe. *Entrepreneurship Theory and Practice*. 32, 203-218.
- Mantzavinos, C., North, D. C. & Shariq, S. (2004) Learning, Institutions, and Economic Performance. *Perspectives on Politics*, 2, 75-84.
- Marshall, A. (1938) *Principles of Economics*, London, MacMillan.
- Mata, J. & Portugal, P. (1994) Life Duration of New Firms. *The Journal of Industrial Economics*, 42, 227-43.
- Matsumoto D, Yoo SH, & Nakagawa S. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*. 94, 925-37.
- Meadowcroft, J., & Pennington, M. (2007). *Rescuing social capital from social democracy*. London, Inst. of Economic Affairs.
- McClelland, D. C. (1967). *The achieving society*. New York, The Free Press.
- McCloskey, D. N. (2010). *Bourgeois dignity: why economics can't explain the modern world*. Chicago, University of Chicago Press.
- McFadyen, M.A., & Cannella, A.A. (2004). Social Capital and Knowledge Creation: Diminishing Returns of the Number and Strength of Exchange Relationships. *Academy of Management Journal*. 47, 735.
- McGrath, R. (2003) Connecting the Study of Entrepreneurship and Theories of Capitalist Progress. IN ACS, Z. J. & AUDRETSCH, D. B. (Eds.) *Handbook*

of Entrepreneurship Research. An Interdisciplinary Survey and Introduction. Boston; Dordrecht, Kluwer.

- McGrath, R.G., MacMillan, I.C., & Scheinberg, S. (1992). Elitists, risk-takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs. *Journal of Business Venturing*, 7, 115-135.
- McMillan, J. & Woodruff, C. (2002) The Central Role of Entrepreneurs in Transition Economies. *Journal of Economic Perspectives*, 16, 153-70.
- McMullen, J. S., Bagby, D. R. & Palich, L. E. (2008) Economic Freedom and the Motivation to Engage in Entrepreneurial Action. *Entrepreneurship Theory and Practice*, 32, 875-895.
- Milgrom, P. & Roberts, J. (1995) Complementarities and Fit: Strategy, Structure, and Organizational Change in Manufacturing. *Journal of accounting & economics*, 19, 179.
- Miller, D. (1996) Configurations Revisited. *Strategic Management Journal*, 17, 505-512.
- Minniti, M., & Bygrave, W. (1999). The microfoundations of entrepreneurship. *Entrepreneurship Theory and Practice*, 23, 41-52.
- Minniti, M. (2005) Entrepreneurship and Network Externalities. *Journal of Economic Behaviour & Organization*, 57, 1-27.
- Mitchell, R. K., Smith, B., Seawright, K. W., & Morse, E. A. (2000). Cross-Cultural Cognitions and the Venture Creation Decision. *Academy of Management Journal*, 43, 974-993.
- Myint, H. & Krueger, A. (2009) Economic Development. *Encyclopædia Britannica*. Encyclopædia Britannica
- Nahapiet, J. & Ghoshal, S. (1998) Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review*, 23, 242-266.
- Naude, W. (2010a) Entrepreneurship in the Field of Development Economics. IN URBAN, B. (Ed.) *Frontiers in Entrepreneurship*. Heidelberg; New York, Springer.
- Naude, W. (2010b) Entrepreneurship, Developing Countries, and Development Economics: New Approaches and Insights. *Small Business Economics*, 34, 1-12.
- Naudé, W. (2010) Entrepreneurship Is Not a Binding Constraint on Growth and Development in the Poorest Countries. *World Development*, In Press, Corrected Proof.

- Naudé, W. A. (2011) *Entrepreneurship and Economic Development*, Houndmills, Basingstoke; New York, NY, Palgrave Macmillan.
- Nelson, R. R. (2008) What Enables Rapid Economic Progress: What Are the Needed Institutions? *Res Policy Research Policy*, 37, 1-11.
- Nielsen, F., & Alderson, A. S. (1997). The Kuznets Curve and the Great U-Turn: Income Inequality in U.S. Counties, 1970 to 1990. *American Sociological Review*. 62, 12.
- Noorderhaven, N., Thurik, R., Wennekers, S. & Stel, A. v. (2004) The Role of Dissatisfaction and Per Capita Income in Explaining Self-Employment across 15 European Countries. *Entrepreneurship Theory and Practice*, 28, 447-466.
- North, D. C. (1955) Location Theory and Regional Economic Growth. *The Journal of Political Economy*, 63, 243-258.
- North, D.C. (1981). *Structure and change in economic history*. New York, Norton.
- North, D. C. (1990) *Institutions, Institutional Change, and Economic Performance*, Cambridge; New York, Cambridge University Press.
- North, D. C. & Wilkinson, W. (2005) Understanding the Process of Economic Change. *The Cato journal*., 25, 172.
- Olson, M. (1982). *The rise and decline of nations: economic growth, stagflation, and social rigidities*. New Haven, Yale University Press.
- Olson, M. (1996) Distinguished Lecture on Economics in Government : Big Bills Left on the Sidewalk : Why Some Nations Are Rich, and Others Poor. *The Journal of economic perspectives*, 10, 3-24.
- Palich, L.E., & Bagby, D. (1995). Using Cognitive Theory to Explain Entrepreneurial Risk-Taking: Challenging Conventional Wisdom. *Journal of Business Venturing*. 10, 425.
- Parker, S. C. (2009) Why Do Small Firms Produce the Entrepreneurs? *J. Socio-Econ. Journal of Socio-Economics*, 38, 484-494.
- Pejovich, S. (1998) *Toward a Theory of the Effects of the Interaction of Formal and Informal Institutions on Social Stability and Economic Development* : Prepared for the Conference on Formal Institutions and Informal Arrangements in Transformation Societies, University of Potsdam, Germany, October 7 - 9, 1998, Freiburg im Breisgau, Inst. für Allg. Wirtschaftsforschung, Abt. für Wirtschaftspolitik.
- Peng, M.W., & Heath, P. S. (1996). The Growth of the Firm in Planned Economies in Transition: Institutions, Organizations, and Strategic Choice. *Academy of Management Review*. 21, 492-528.

- Peng, M.W. (2003). Institutional Transitions and Strategic Choices. *The Academy of Management Review*. 28, 275-296.
- Peng, M. & Zhou, J. (2005) How Network Strategies and Institutional Transitions Evolve in Asia. *Asia Pacific Journal of Management*, 22, 321-336.
- Peng, M., Li Sun, S., Pinkham, B., & Chen, H. (2009). The Institution-Based View as a Third Leg for a Strategy Tripod. *PERSPECTIVES- ACADEMY OF MANAGEMENT*. 23, 63-81.
- Pennings, J. (1982) Organisational Birth Frequencies: An Empirical Investigation. *Administrative Science Quarterly*, 27, 120-44.
- Pinillos, M.-J., & Reyes, L. (2011). Relationship between individualist-collectivist culture and entrepreneurial activity: evidence from Global Entrepreneurship Monitor data. *Small Business Economics*. 37, 23-37.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. & Podsakoff, N. P. (2003) Common Method Biases in Behavioural Research: A Critical Review of the Literature and Recommended Remedies. *The Journal of applied psychology*, 88, 879-903.
- Porter, M. E. (1998a) Clusters and the New Economics of Competition. *Harvard business review*, 76.
- Porter, M. E. (1998b) *The Competitive Advantage of Nations : With a New Introduction*, New York, Free Press.
- Porter, M. E., Schwab, K., Sachs, J., Cornelius, P. K. & McArthur, J. W. (2002) *The Global Competitiveness Report 2001-2002 : World Economic Forum, Geneva, Switzerland 2001*, New York, Oxford University Press.
- Preacher, K. (2010) A Primer on Interaction Effects in Multiple Linear Regression, Retrieved on September 6, 2010 from [Http://Www.Unc.Edu/Preacher/Interact/Interactions.Htm](http://Www.Unc.Edu/Preacher/Interact/Interactions.Htm).
- Preacher, K. J., Curran, P. J. & Bauer, D. J. (2006) Computational Tools for Probing Interactions in Multiple Linear Regression, Multilevel Modelling, and Latent Curve Analysis. *JOURNAL OF EDUCATIONAL AND BEHAVIORAL STATISTICS*, 31, 437-448.
- Puffer, S. M., McCarthy, D. J. & Boisot, M. (2010) Entrepreneurship in Russia and China: The Impact of Formal Institutional Voids. *Entrepreneurship Theory and Practice*, 34, 441-467.
- Putnam, R. D. (1994) Social Capital and Public Affairs. *Bulletin of the American Academy of Arts and Sciences*, 47, 5-19.
- Reeves, T. C., Duncan, W. J. & Ginter, P. M. (2003) Strategic Configurations in Health Services Organizations. *Journal of business research*., 56, 31.

- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. & Chin, N. (2005) Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. *Small Business Economics*, 24, 205-231.
- Reynolds, P. D. (1994) Autonomous Firm Dynamics and Economic Growth in the United States, 1986-1990. *Regional Studies*, 28, 429-42.
- Reynolds, P. D. (1997) Who Starts New Firms? Preliminary Explorations of Firms-in-Gestation. *Small Business Economics*, 9, 449-62.
- Reynolds, P. D., Storey, D. J. & Westhead, P. (1994) Cross-National Comparisons of the Variation in New Firm Formation Rates. *Regional Studies*, 41, 123-136.
- Reynolds, P. D. & White, S. (1997) *The Entrepreneurial Process: Economic Growth, Men, Women and Minorities*, Westport, Quorum Books.
- Roberts, E. (1991) *Entrepreneurs in High Technology*, New York, Oxford University Press.
- Robinson, P. B. & Sexton, E. A. (1994) The Effect of Education and Experience on Self-Employment Success. *Journal of Business Venturing*, 9, 141-156.
- Rodrik, D., 2002. Institutions, integration, and geography: in search of the deep determinants of economic growth. Unpublished. Kennedy School of Government, Harvard University.
- Rodrik, D. (2003) *In Search of Prosperity : Analytic Narratives on Economic Growth*, Princeton, Princeton University Press.
- Rodrik, D. (2006). Goodbye Washington Consensus, Hello Washington Confusion? A Review of the World Bank's "Economic Growth in the 1990s: Learning from a Decade of Reform". *Journal of Economic Literature*. 44, 973-987.
- Rodrik, D. (2008) Second-Best Institutions. IN RESEARCH, N. B. O. E. (Ed.) Cambridge, Mass., National Bureau of Economic Research.
- Rodrik, D., Subramanian, A. & Trebbi, F. (2004) Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. *Journal of Economic Growth*, 9, 131-165.
- Romer, P. (1994) The Origins of Endogenous Growth. *The Journal of Economic Perspectives*, 8, 3-22
- Rosenberg, M. (1968) *The Logic of Survey Analysis*, New York, Basic Books.
- Rosenberg, M. (2011) Capitals of Every Independent Country. <http://geography.about.com/od/countryinformation/a/capitals.htm>.

- Rosenberg, N., & Birdzell, L. E. (1986). *How the West grew rich: the economic transformation of the industrial world*. New York, Basic Books.
- Rostow, W. W. (1960) *The Stages of Economic Growth, a Non-Communist Manifesto*, Cambridge [Eng., University Press.
- Rostow, W. W. (1975) *How It All Began; Origins of the Modern Economy*, New York, McGraw-Hill.
- Ruef, M. (2002) Strong Ties, Weak Ties, and Islands: Structural and Cultural Predictors of Organisational Innovation. *Industrial and corporate change*, 11, 427-50.
- Sachs, J. (1993) *Poland's Jump to the Market Economy*, Cambridge, Mass., MIT Press.
- Salimath, M. S. & Cullen, J. B. (2010) Formal and Informal Institutional Effects on Entrepreneurship: A Synthesis of Nation-Level Research. *International Journal of Organizational Analysis*, 18, 358-385.
- Sarasvathy, SD. (2001). Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency. *Academy of Management Review*.26, 243-263.
- Schmid, A. A. (2004) *Conflict and Cooperation : Institutional and Behavioural Economics*, Malden, MA, Blackwell Pub.
- Schmitz, J. A. (1989) Imitation, Entrepreneurship, and Long-Run Growth. *Journal of Political Economy*, 97, 721-739.
- Schneider, F. & Enste, D. H. (2000) Shadow Economies: Size, Causes, and Consequences. *Journal of Economic Literature*, 38, 77-114.
- Scholtens, B., & Dam, L. (2007). Cultural Values and International Differences in Business Ethics. *Journal of Business Ethics*. 75, 273-284.
- Schoonhoven, C. & Romanelli, E. (2001) *The Entrepreneurship Dynamic : Origins of Entrepreneurship and the Evolution of Industries*, Stanford, Stanford University Press.
- Schoonhoven, C. B. (1981) Problems with Contingency Theory: Testing Assumptions Hidden within the Language of Contingency "Theory." *Administrative science quarterly*, 26, 349-77.
- Schultz, T. W. (1980) Investment in Entrepreneurial Ability. *The Scandinavian Journal of Economics*, 82, 437-448.
- Schumpeter, J. A. (1936) *The Theory of Economic Development : An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Cambridge, Mass., Harvard Univ. Press.

- Schwab, K. & Sala-i-Martin, X. (2010) *The Global Competitiveness Report 2009-2010*. Geneva, World Economic Forum.
- Schwab, K. M. (2009) *The Africa Competitiveness Report 2009*, Geneva, World Economic Forum.
- Scott, W. R. (1995) *Institutions and Organizations*, Thousand Oaks, SAGE.
- Scott, W. R. (2001) *Institutions and Organizations*. Thousand Oaks, Calif., Sage Publications.
- Shane, S. (1991) *A Cultural Explanation for National Differences in Rates of Innovation*, Philadelphia, Pa., Wharton School of the University of Pennsylvania, Snider Entrepreneurial Centre.
- Shane, S. (1992). Why do some societies invent more than others? *Journal of Business Venturing*, 7, 29-46.
- Shane, S. (1994) The Effect of National Culture on the Choice between Licensing and Direct Foreign Investment. *Strategic Management Journal*, 15, 627-642.
- Shane, S. (2001) Technology Regimes and New Firm Formation. *Management Science*, 47, 1173-81.
- Shane, S. (2003) *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*, Cheltenham, Edward Elgar.
- Shane, S. (2009) Why Encouraging More People to Become Entrepreneurs Is Bad Public Policy. *Small Business Economics*, 33, 141-149.
- Shane, S. & Venkataraman, S. (2000) The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, 25, 217-226.
- Shapero, A. & Sokol, L. (1982) The Social Dimensions of Entrepreneurship. IN KENT, C. A., SEXTON, D. L. & VESPER, K. H. (Eds.) *Encyclopaedia of Entrepreneurship*. Englewood Cliffs, NJ, Prentice-Hall,.
- Shieh, G. (2010) On the Misconception of Multicollinearity in Detection of Moderating Effects: Multicollinearity Is Not Always Detrimental. *Multivariate Behavioural Research*, 45, 483-507.
- Short, J., Ketchen, D., Shook, C. & Ireland, R. (2010) The Concept Of "Opportunity" In Entrepreneurship Research: Past Accomplishments and Future Challenges. *Journal of Management*, 36, 40-65.
- Siggelkow, N. (2002) Misperceiving Interactions among Complements and Substitutes: Organizational Consequences. *Management Science*, 48, 900-916.

- Sine, W., Haveman, H. & Tolbert, P. (2001) Institutional Influences on Founding Variation in the Emerging Independent Power Industry University of Maryland.
- Singh, R., Hills, G., Hybels, R. & Lumpkin, G. (1999) Opportunity Recognition through Social Network Characteristics of Entrepreneurs. IN REYNOLDS, P. D., BYGRAVE, W., MANIGART, S., MASON, C., MEYER, G., SAPIENZA, H. J. & SHAVER, K. (Eds.) *Frontiers of Entrepreneurship Research*. Babson Park, Babson College.
- Smallbone, D. & Welter, F. (2009) *Entrepreneurship and Small Business Development in Post-Socialist Economies*, London; New York, Routledge.
- Smallbone, D., Welter, F., Galbraith, C. & Stiles, C. (2006) Institutional Development and Entrepreneurship in a Transition Context. *International Research in the Business Disciplines*. JAI.
- Smith, A. E. (1992) Race, Gender and Entrepreneurial Orientation. *National Journal of Sociology*, 12, 141-55.
- Snijders, T. A. B. & Bosker, R. J. (2000) *Multilevel Analysis an Introduction to Basic and Advances Multilevel Modelling*, London, Sage.
- Sobel, R. S. (2008) Testing Baumol: Institutional Quality and the Productivity of Entrepreneurship. *J. Bus. Venturing Journal of Business Venturing*, 23, 641-655.
- Sobel, R.S. & Coyne, C.J. (2011) *Cointegrating institutions: The time-series properties of country institutional measures*. *J. Law Econ. Journal of Law and Economics*, 54(1), 111-134
- Solow, R. (1957) Technical Change and the Aggregate Production Function. *The Review of Economics and Statistics*, 39, pp. 312-320
- Spencer, J. W. & Gomez, C. (2004) The Relationship among National Institutional Structures, Economic Factors, and Domestic Entrepreneurial Activity: A Multicountry Study. *JOURNAL OF BUSINESS RESEARCH*, 57, 1098-1107.
- Spencer, J. W., Murtha, T. P. & Lenway, S. A. (2005) How Governments Matter to New Industry Creation. *The Academy of Management review.*, 30, 321.
- Staw BM. (1995). Repairs on the road to relevance and rigor: some unexplored issues in publishing organizational research. In Cummings LL, Frost PJ (Eds.), *Publishing in the organizational sciences* (pp. 85-97). Thousand Oaks, CA: Sage.
- Steensma, H.K., Marino, L., Weaver, K.M., & Dickson, P.H. (2000a). The Influence of National Culture on the Formation of Technology Alliances by Entrepreneurial Firms. *Academy of Management Journal*. 43, 951-973.

- Steensma, H., Marino, L. & Weaver, M. (2000b) Attitudes toward Cooperative Strategies: A Cross-Cultural Analysis of Entrepreneurs *Journal of International Business Studies*, 31, 591-609
- Stevenson, HH., & Jarillo, JC. (1990). A Paradigm of Entrepreneurship: Entrepreneurial Management. *Strategic Management Journal*. 11, 17-27.
- Stevenson, H. H. (1988) *A Perspective on Entrepreneurship*, Boston, Ma, Harvard Business School.
- Stiglitz, J. (2000) Formal and Informal Institutions. IN DASGUPTA, P. & SERAGELDIN, I. (Eds.) *Social Capital a Multifaceted Perspective*. Washington, D.C., World Bank.
- Stock, J. H. & Watson, M. W. (2007) *Introduction to Econometrics*, Boston, Pearson/Addison Wesley.
- Szyliowicz, D. & Galvin, T. (2010) Applying Broader Strokes: Extending Institutional Perspectives and Agendas for International Entrepreneurship Research. *International Business Review*, 19, 317-332.
- Tabellini G. (2010). Culture and institutions: Economic development in the regions of Europe. *Journal of the European Economic Association*. 8, 677-716.
- Thomas, A. S. & Mueller, S. L. (2000) A Case for Comparative Entrepreneurship: Assessing the Relevance of Culture. *Journal of International Business Studies*, 31, 287-302.
- Thornton, PH. (1999). The Sociology of Entrepreneurship. *Annual Review of Sociology*. 25, 19-46.
- Thurik, A. R., van Stel, A., Audretsch, D. B. & Carree, M. A. (2008) Does Self-Employment Reduce Unemployment? *J. Bus. Venturing Journal of Business Venturing*, 23, 673-686.
- Tiessen, J. H. (1997). Individualism, Collectivism, and Entrepreneurship: A Framework for International Comparative Research. *Journal of Business Venturing*. 12, 367.
- Tiwana, A. (2010) Systems Development Ambidexterity: Explaining the Complementary and Substitutive Roles of Formal and Informal Controls. *Journal of Management Information Systems*, 27, 87-126.
- Todaro, M. P. & Smith, S. C. (2009) *Economic Development*, Harlow, Addison Wesley.
- Ucbasaran, D., Westhead, P. & Wright, M. (2008) Opportunity Identification and Pursuit: Does an Entrepreneur's Human Capital Matter? *Small Business Economics*, 30, 153-173.

- Uhlaner, L. M., Thurik, A. R. & Hutjes, J. (2002) Post-Materialism as a Cultural Factor Influencing Entrepreneurial Activity across Nations.
- Unger, J. M., Rauch, A., Frese, M. & Rosenbusch, N. (2011) Human Capital and Entrepreneurial Success: A Meta-Analytical Review. *JOURNAL OF BUSINESS VENTURING*, 26, 341-358.
- Urban, B. (2011). Social capital configurations for necessity-driven versus opportunity-driven entrepreneurs. *South African Journal of Economic and Management Sciences*, 14, 407-421.
- Uzzi, B. (1997) Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly*, 42, 35-67.
- van de Ven, A.H. (1993), "Managing the process of organizational innovation", in Huber, G.P. and Glick, W.H. (Eds), *Organizational Change and Redesign*, Oxford University Press, Oxford, pp. 269-94.
- Van Gelderen, M., Thurik, R., & Bosma, N. (2006). Success and Risk Factors in the Pre-Startup Phase. *Small Business Economics*. 26, 319-335.
- van Stel, A., Storey, D. & Thurik, A. (2007) The Effect of Business Regulations on Nascent and Young Business Entrepreneurship. *Small Business Economics*, 28, 171-186.
- Vanhoutte, C., Martens, D., De Winne, S., Sels, L. & Baesens, B. (2010) The Initial Resource-Performance Relationship in New Ventures : Towards a Configurational Approach. IN LANGAN-FOX, J. (Ed.) *AGSE International Entrepreneurship Research Exchange* Queensland, Proceedings of the 7th AGSE international entrepreneurship research exchange
- Venkataraman, S. (1997) The Distinctive Domain of Entrepreneurship Research. IN KATZ, J. & BROCKHAUS SR, R. H. (Eds.) *Advances in Entrepreneurship, Firm Emergence, and Growth*. Greenwich, JAI Press.
- Verheul, I., Wennekers, S., Audretsch, D. & Thurik, R. (2001) An Eclectic Theory of Entrepreneurship: Policies, Institutions and Culture. Amsterdam, The Tinbergen Institute,.
- Vesper, K. H. & Gartner, W. B. (1997) Measuring Progress in Entrepreneurship Education. *Journal of Business Venturing*, 12, 403-421.
- Virgill, N. (2009) Export Processing Zones Tools of Development or Reform Delay? Fairfax, VA, George Mason University.
- Wade, R. (1990) *Governing the Market : Economic Theory and the Role of Government in East Asian Industrialization*, Princeton, N.J., Princeton University Press.
- Walle, N. V. D. (2001). *African Economies and the Politics of Permanent Crisis, 1979-1999*. Cambridge, Cambridge University Press

- Wallerstein, I. M. (1974) *The Modern World-System*, New York, Academic Press.
- Walstad, W. B. & Kourilsky, M. L. (1998) Entrepreneurship Attitudes and Knowledge of Black Youth. *Entrepreneurship Theory and Practice*, 23, 5-18.
- Welter, F. (2011). Contextualizing Entrepreneurship-Conceptual Challenges and Ways Forward. *ENTREPRENEURSHIP THEORY AND PRACTICE*. 35, 165-184.
- Welter, F. (2005) Entrepreneurial Behaviour in Differing Environments. *INTERNATIONAL STUDIES IN ENTREPRENEURSHIP*, 93-112.
- Welter, F. & Smallbone, D. (2003) Entrepreneurship and Enterprise Strategies in Transition Economies: An Institutional Perspective. IN KIRBY, D. A. & WATSON, A. (Eds.) *Small Firms and Economic Development in Developed and Transition Economies: A Reader* Aldershot, Ashgate Publishing Group.
- Wennekers, A. R. M. & Thurik, A. R. (1999) *Linking Entrepreneurship and Economic Growth*, Rotterdam; Rotterdam, Erasmus Research Institute of Management, Erasmus University ; Erasmus University [Host].
- Wennekers, S., Van Stel, A., Thurik, R. & Reynolds, P. (2005) Nascent Entrepreneurship and the Level of Economic Development. *Small Business Economics*, 24, 293-309.
- Westlund, H. & Bolton, R. (2003) Local Social Capital and Entrepreneurship. *Small Business Economics*, 21, 77-113.
- Westlii, G. P. & Meyer, G. D. (1998) To Agree or Not to Agree? Consensus and Performance in New Ventures. *Journal of Business Venturing*, 13, 395-422.
- Whitley, R. (1994). Dominant Forms of Economic Organization in Market Economies. *Organization Studies*. 15, 153-182.
- Whitley, R. (1999) *Divergent Capitalism : The Social Structuring and Change of Business Systems*, Oxford, Oxford University Press.
- Wiklund, J. & Shepherd, D. (2005) Entrepreneurial Orientation and Small Business Performance: A Configurational Approach. *Journal of Business Venturing*, 20, 71-91.
- Williamson, C. R. and C. B. Kerekes. (2008). "Securing Private Property: The Relative Importance of Formal versus Informal Institutions," *Mimeo*, Appalachian State University and Florida Gulf Coast University
- Williamson, C. R. (2009) Informal Institutions Rule: Institutional Arrangements and Economic Performance. *Public Choice*, 139, 3-4.

- Williamson C.R. (2011). Civilizing society. *Journal of Private Enterprise*. 27, 99-120.
- Williamson, C. R., & Mathers, R. L. (2011). Economic freedom, culture, and growth. *Public Choice*. 148, 3-4.
- Williamson, O (2000) The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature*, 38(3), 595-613
- Winter, S. (1984) Schumpeterian Competition in Alternative Technological Regimes. *Journal of Economic Behaviour & Organization*, 5, 287-320.
- Woolcock, M. (1998). Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and Society*. 27, 151-208.
- Wooldridge, J. M. (2002) *Econometric Analysis of Cross Section and Panel Data*, Cambridge, Mass., MIT Press.
- World Bank (2007). *Doing Business in 2007: How to Reform*. Washington, DC: IBRD/World Bank.
- World Bank (2010) Country Classifications. Washington, World Bank, <http://data.worldbank.org/about/country-classifications>.
- Wright, M. (2005). *Strategy research in emerging economies: challenging the conventional wisdom*. Oxford, UK, Blackwell Pub.

Appendix 1: Research instrument

Institution	Indicator	Abbreviation used in thesis	Reliability (Chronbach)	Item code	Measure	Load
Formal	Finance EFC	Fin1	0.8249	A01	In my country, there is sufficient equity funding available for new and growing firms	0.8121
	Finance EFC			A02	In my country, there is sufficient debt funding available for new and growing firms	0.9797
	Finance EFC			A03	In my country, there are sufficient government subsidies available for new and growing firms	0.68
Formal	Finance EFC	Fin2	0.843	A04	In my country, there is sufficient funding available from private individuals (other than founders) for new and growing firms	0.8308
	Finance EFC			A05	In my country, there is sufficient venture capitalist funding available for new and growing firms	0.8317
	Finance EFC			A06	In my country, there is sufficient funding available through initial public offerings (IPOs) for new and growing firms	0.8915
Formal	Policy EFC	GPR	0.9112	B01	In my country, government policies (e.g., public procurement) consistently favour new firms	0.7666
	Policy EFC			B02	In my country, the support for new and growing firms is a high priority for policy at the national government level	0.7623
	Policy EFC			B03	In my country, the support for new and growing firms is a high priority for policy at the local government level	0.743
	Regulations EFC			B04	In my country, new firms can get most of the required permits and licenses in about a week	0.8076
	Regulations EFC			B05	In my country, the amount of taxes is NOT a burden for new and growing firms	0.8465
	Regulations EFC			B06	In my country, taxes and other government regulations are applied to new and growing firms in a predictable and consistent way	0.8727
	Regulations EFC			B07	In my country, coping with government bureaucracy, regulations and licensing requirements is not unduly difficult for new and growing firms	0.8958
Formal	Primary education EFC	Prim	0.9012	D01	In my country, teaching in primary and secondary education encourages creativity, self-sufficiency and personal initiative	0.9459

Institution	Indicator	Abbreviation used in thesis	Reliability (Chronbach)	Item code	Measure	Load
	Primary education EFC			D02	In my country, teaching in primary and secondary education provides adequate instruction in market economic principles	0.8913
	Primary education EFC			D03	In my country, teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation	0.9067
Formal	Higher education EFC	High	0.7703	D04	In my country, colleges and universities provide good and adequate preparation for starting up and growing new firms	0.7425
	Higher education EFC			D05	In my country, the level of business and management education provides good and adequate preparation for starting up and growing new firms	0.8904
	Higher education EFC			D06	In my country, the vocational, professional and continuing education systems provide good and adequate preparation for starting up and growing new firms	0.8322
Formal	R&D transfer EFC	RDev	0.8668	E01	In my country, new technology, science, and other knowledge are efficiently transferred from universities and public research centres to new and growing firms	0.8229
	R&D transfer EFC			E02	In my country, new and growing firms have just as much access to new research and technology as large, established firms	0.7806
	R&D transfer EFC			E03	In my country, new and growing firms can afford the latest technology	0.6487
	R&D transfer EFC			E04	In my country, there are adequate government subsidies for new and growing firms to acquire new technology	0.7835
	R&D transfer EFC			E05	In my country, the science and technology base efficiently supports the creation of world-class new technology-based ventures in at least one area	0.7678
	R&D transfer EFC			E06	In my country, there is good support available for engineers and scientists to have their ideas commercialized through new and growing firms	0.875
Formal	Market dynamism EFC	MDyn	0.9672	G01	In my country, the markets for consumer goods and services change dramatically from year to year	0.992
	Market dynamism EFC			G02	In my country, the markets for business-to-business goods and services change dramatically from year to year	0.9809

Institution	Indicator	Abbreviation used in thesis	Reliability (Chronbach)	Item code	Measure	Load
Informal	Market openness EFC	Mope	0.8455	G03	In my country, new and growing firms can easily enter new markets	0.9526
	Market openness EFC			G04	In my country, the new and growing firms can afford the cost of market entry	0.9382
	Market openness EFC			G05	In my country, new and growing firms can enter markets without being unfairly blocked by established firms	0.7364
	Market openness EFC			G06	In my country, the anti-trust legislation is effective and well enforced	0.4958
Informal	Entrep culture EFC	ECul	0.8861	I01	In my country, the national culture is highly supportive of individual success achieved through own personal efforts	0.7205
	Entrep culture EFC			I02	In my country, the national culture emphasizes self-sufficiency, autonomy and personal initiative	0.8798
	Entrep culture EFC			I03	In my country, the national culture encourages entrepreneurial risk-taking	0.9058
	Entrep culture EFC			I04	In my country, the national culture encourages creativity and innovativeness	0.8442
	Entrep culture EFC			I05	In my country, the national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life	0.8196
Informal	Entrep Capacity EFC	ECap	0.8569	L01	In my country, many people know how to start and manage a high-growth business	0.5042
	Entrep Capacity EFC			L02	In my country, many people know how to start and manage a small business	0.8204
	Entrep Capacity EFC			L03	In my country, many people have experience in starting a new business	0.9045
	Entrep Capacity EFC			L04	In my country, many people can react quickly to good opportunities for a new business	0.9052
	Entrep Capacity EFC			L05	In my country, many people have the ability to organize the resources required for a new business	0.9077
Informal	Entrep social image EFC	ESIm	0.843	M01	In my country, the creation of new ventures is considered an appropriate way to become rich	0.8293
	Entrep social image EFC			M02	In my country, most people consider becoming an entrepreneur as a desirable career choice	0.6984
	Entrep social image EFC			M03	In my country, successful entrepreneurs have a high level of status and respect	0.8755

Institution	Indicator	Abbreviation used in thesis	Reliability (Chronbach)	Item code	Measure	Load
	Entrep social image EFC			M04	In my country, you will often see stories in the public media about successful entrepreneurs	0.8201
	Entrep social image EFC			M05	In my country, most people think of entrepreneurs as competent and resourceful individuals	0.6955
	Knowent	Know	NA	Q1G	You know someone personally who started a business in the past 2 years.	NA
	Entrepreneurial Activity	EA	NA		New company registrations divided by total registrations per year (WBGES data)	NA
	logGDPcap	ED	NA		GDP per capita data available from the IMF website	NA
	Country	Country	NA		Country name. Fixed effects based on dummy variables (or mean-centred differences)	NA
	Year	Year	NA		Year of measurement. Fixed effects based on dummy variables (or mean-centred differences)	NA

Appendix 2: Factor analysis

Factor 1: Entrepreneur social Image (reliability = 0.8430)

Factor analysis/correlation		Number of obs =	176
Method: principal-component factors		Retained factors =	1
Rotation: oblique promax (Kaiser on)		Number of params =	5

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	3.09839	0.6197	

LR test: independent vs. saturated: $\chi^2(10) = 397.55$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
nr01	0.8293	0.3122
nr02	0.6984	0.5122
nr03	0.8755	0.2336
nr04	0.8201	0.3274
nr05	0.6955	0.5163

Factor 2: Cultural and social norms (Entrepreneurship culture) (reliability = 0.8861)

Factor analysis/correlation
 Method: principal-component factors
 Rotation: oblique promax (Kaiser on)

Number of obs = 176
 Retained factors = 1
 Number of params = 5

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	3.49796	0.6996	

LR test: independent vs. saturated: $\chi^2(10) = 631.19$ Prob> $\chi^2 = 0.000$

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
i01	0.7205	0.4809
i02	0.8798	0.2280
i03	0.9058	0.1795
i04	0.8442	0.2874
i05	0.8196	0.3282

Factor 3 and 4: Finance1 (a01, a02, a03) (reliability = 0.8249), Finance 2 (a04, a05, a06) (reliability = 0.8430)

Factor analysis/correlation			Number of obs =	176
Method: principal-component factors			Retained factors =	2
Rotation: oblique promax (Kaiser on)			Number of params =	11

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	2.98842	0.4981	
Factor2	2.87114	0.4785	

LR test: independent vs. saturated: $\chi^2(15) = 607.86$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
a01	0.1701	0.8121	0.1760
a02	-0.1872	0.9797	0.1851
a03	0.2210	0.6800	0.3413
a04	0.8308	0.0558	0.2612
a05	0.8317	0.1833	0.1252
a06	0.8915	-0.1288	0.3013

Factor 5 and 6: Primary education (d01, d02, d03) (reliability = 0.9012), Higher education (d04, d05, d06) (reliability = 0.7703)

Factor analysis/correlation
 Method: principal-component factors
 Rotation: oblique promax (Kaiser on)

Number of obs = 176
 Retained factors = 2
 Number of params = 11

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	2.80515	0.4675	
Factor2	2.35122	0.3919	

LR test: independent vs. saturated: $\chi^2(15) = 534.54$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
d01	0.9459	-0.1067	0.1580
d02	0.8913	0.0950	0.1427
d03	0.9067	0.0355	0.1561
d04	0.1881	0.7425	0.3247
d05	-0.1277	0.8904	0.2631
d06	0.0143	0.8322	0.2997

Factor 7: Entrepreneurial capacity (reliability = 0.8569)

Factor analysis/correlation			Number of obs =	176
Method: principal-component factors			Retained factors =	1
Rotation: oblique promax (Kaiser on)			Number of params =	5

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	3.38874	0.6777	

LR test: independent vs. saturated: $\chi^2(10) = 572.46$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

variable	Factor1	Uniqueness
101	0.5042	0.7458
102	0.8204	0.3270
103	0.9046	0.1818
104	0.9052	0.1807
105	0.9077	0.1760

Factor 8: Policy and regulations (reliability =0.9112)

Factor analysis/correlation			Number of obs =	176
Method: principal-component factors			Retained factors =	1
Rotation: oblique promax (Kaiser on)			Number of params =	7

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	4.65367	0.6648	

LR test: independent vs. saturated: $\chi^2(21) = 930.38$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

variable	Factor1	Uniqueness
b01	0.7666	0.4124
b02	0.7623	0.4190
b03	0.7430	0.4479
b04	0.8076	0.3478
b05	0.8465	0.2834
b06	0.8727	0.2383
b07	0.8958	0.1976

Factor 9: R&D transfer (reliability =0.8668)

Factor analysis/correlation		Number of obs	=	176
Method: principal-component factors		Retained factors	=	1
Rotation: oblique promax (Kaiser on)		Number of params	=	6

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	3.67853	0.6128	

LR test: independent vs. saturated: $\chi^2(15) = 567.21$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

variable	Factor1	Uniqueness
e01	0.8229	0.3228
e02	0.7806	0.3907
e03	0.6487	0.5791
e04	0.7835	0.3861
e05	0.7678	0.4104
e06	0.8750	0.2344

Factor 10 and 11: Market dynamism (g01, g02) (reliability =0.9672). Market openness (g03, g04, g05, g06) (reliability = 0.8455)

Factor analysis/correlation			Number of obs =	176
Method: principal-component factors			Retained factors =	2
Rotation: oblique promax (Kaiser on)			Number of params =	11

Factor	Variance	Proportion	Rotated factors are correlated
Factor1	2.92484	0.4875	
Factor2	2.68835	0.4481	

LR test: independent vs. saturated: $\chi^2(15) = 868.18$ Prob> $\chi^2 = 0.0000$

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
g01	0.0504	0.9920	0.0451
g02	0.0526	0.9809	0.0677
g03	0.9526	0.1289	0.1536
g04	0.9382	0.0897	0.1649
g05	0.7364	-0.3302	0.1949
g06	0.4958	-0.4884	0.3625

Appendix 3: Illustration of simple slope computation

The simple slope was computed using the coefficients in the Table below. The equation that was used to compute the slopes is as follows:

$$(b_1 + b_4 (z) + b_5 (w) + b_7 (zw))$$

Table A4.1 Configuration lgGDPcap x GPR x ESIIm

		mean	std dev	Weak	Strong		
x	GPR	2.507	.537	1.970	3.044		
z	ESIIm	3.351	.395	2.956	3.745		
w	lgGDP	4.232	.437	3.795	4.669		
bo	bx	bz	bw	bxz	bxw	bzw	bxzw
2.294	-0.898	-0.598	-0.572	0.233	0.227	0.155	-0.058
Weak ESIIm, Weak lgGDP	intercept	0.094		Weak ESIIm, Strong lgGDP	intercept	- 0.005	
	slope	-0.002			slope	0.046	
Strong ESIIm, Strong lgGDP	intercept	0.094		Strong ESIIm, Weak lgGDP	intercept	0.087	
	slope	0.015			slope	0.007	

Appendix 4: Results not used for hypothesis testing

Table A4-1: Random-effects GLS estimation of EA against Know, RDev and ED indicators

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
ED	0.024*	0.013	0.018	0.013	0.019	0.013	0.018	0.013	-0.132*	0.074	-0.146*	0.077	-0.488**	0.205
Informal	-0.0002	0.017			-0.002	0.017	-0.226	0.148	-0.01	0.02	-0.329	0.245	-4.036**	1.822
H1: Formal			0.019*	0.011	0.018	0.011	-0.014	0.028	-0.239*	0.124	-0.259**	0.117	-0.866**	0.347
H2: Formal#Informal							0.09	0.058			0.057	0.068	1.572**	0.725
H3: Formal#ED									0.061**	0.03	0.061**	0.029	0.201**	0.084
Informal#ED											0.042	0.061	0.9**	0.439
H4, H5, H6: Formal#Informal#ED													-0.349**	0.173
Constant	0.0003	0.056	-0.022	0.062	-0.021	0.062	0.064	0.091	0.608**	0.306	0.723**	0.3001	2.197***	0.843
R square within	0.032		0.102		0.101		0.117		0.207		0.226		0.247	
R square between	0.113		0.073		0.075		0.078		0.062		0.055		0.068	
R square overall	0.094		0.086		0.087		0.082		0.065		0.064		0.068	
Wald chi-square (df)	3.25 (2)		4.66* (2)		4.86 (3)		11.06** (4)		9.34** (4)		12.73** (6)		17.84*** (7)	
Chi-square difference (df)					1.61 (1)		6.2** (1)		4.48** (1)		7.87** (3)		5.11** (1)	

Table A4-2: Random-effects GLS estimation of EA against ESlm, Fin2 and ED indicators

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
ED	0.022*	0.013	0.024	0.014*	0.022*	0.013	0.022*	0.013	-0.033	0.032	-0.062	0.078	-0.495***	0.184
Informal	0.019***	0.007			0.02**	0.008	0.023	0.025	0.02**	0.008	-0.011	0.099	-0.549***	0.201
H1: Formal			0.003	0.004	-0.001	0.004	0.003	0.032	-0.095*	0.054	-0.066	0.066	-0.854**	0.372
H2: Formal#Informal							-0.001	0.009			-0.005	0.009	0.222**	0.095
H3: Formal#ED									0.022*	0.012	0.019	0.015	0.201**	0.085
Informal#ED											0.01	0.023	0.136***	0.048
H4, H5, H6: Formal#Informal#ED													-0.052**	0.022
Constant	-0.055	0.065	-0.004	0.056	-0.054	0.065	-0.065	0.107	0.179	0.137	0.255	0.305	2.113***	0.768
R square within	0.07		0.031		0.07		0.071		0.11		0.118		0.159	
R square between	0.25		0.124		0.25		0.252		0.221		0.212		0.214	
R square overall	0.192		0.111		0.19		0.19		0.171		0.166		0.166	
Wald chi-square (df)	7.53** (2)		3.75 (2)		7.97** (3)		8.42* (4)		10.87** (4)		13.26** (6)		16.44** (7)	
Chi-square difference (df)					0.44 (1)		0.45 (1)		2.9* (1)		5.29 (3)		3.18* (1)	
Chi-square difference (df)					4.22** (1)									

